Order No. MAC0111062C0

Service Manual

Room Air Conditioner

CS-A18BKP CU-A18BKP5 / CS-A24BKP CU-A24BKP5

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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic

⚠ PRECAUTION OF LOW TEMPERATURE

In order to avoid frostbite, be assured of no refrigerant leakage during the installation or repairing of refrigeration circuit.

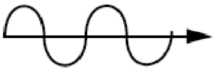
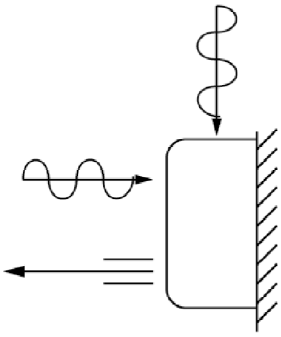
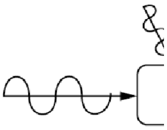
1. Features

- High Efficiency
- Compact Design
- Comfort Environment

- 8 hours of sleep mode operation
- Air filter with function to reduce dust and smoke
- Wider range of horizontal discharge air
- New Automatic air swing and manual adjusted by remote control for horizontal airflow.
- Auto Restart
- Random auto restart after power failure for safety restart operation
- Removable and Washable Front Panel
- Remote Control Self-illuminating Button
- Catechin Air Purifying Filter
- Trap dust, tobacco smoke and tiny particles
- Prevent the growth of bacteria and viruses trapped
- Solar Refreshing Deodorizing Filter
- Remove unpleasant odour from the air
- Quality Improvement
- Gas leakage protection
- Prevent compressor reverse cycle
- Inner protector
- Noise prevention during soft dry operation.
- Anti-dew Formation Control (Cooling & Soft Dry)
- Overload Protection Control (Heating)
- Outdoor Fan Control
- Compressor High Pressure Control
- Blue Coated Condenser
- High resistance to corrosion.
- Operation Improvement
- Economy mode to reduce electrical power consumption
- Powerful mode to reach the desired room temperature quickly
- Long Installation Piping
- Long piping up to 25 meter
- 24-hour Timer Setting

2. Functions

3. Product Specifications

		Unit	CS-A18BK		CU-A1
Power Source		Phase, Voltage, Cycle	(1) (4)	Single, 230 - 220, 50 Hz	
			(2)	Single, 240 - 230, 50 Hz	
			(3)	Single, 220, 50 Hz	
Cooling Capacity		kW (BTU/h)	(1) (2) (4)	5.30 - 5.30 (18,100 - 18,100)	
			(3)	5.30 (18,100)	
Heating Capacity		kW (BTU/h)	(1) (4)	5.70 - 5.65 (19,400 - 19,300)	
			(2)	5.75 - 5.70 (19,600 - 19,400)	
			(3)	5.65 (19,300)	
Moisture Removal		l/h (Pint/h)	2.9 (6.1)		
Airflow Method		OUTLET INTAKE 	SIDE VIEW 		TOP V 
Air Volume	**Indoor Air (Lo)**	m3/min (cfm)	(1) (2) (4)	Cooling; 13.1 (460) - 13.1 (460) Heating; 14.1 (500) - 14.1 (500)	—
			(3)	Cooling; 13.1 (460) Heating; 14.1 (500)	—
	Indoor Air (Me)	m3/min (cfm)	(1) (2) (4)	Cooling; 14.6 (520) - 14.6 (520) Heating; 14.7 (520) - 14.7 (520)	—
			(3)	Cooling; 14.6 (520) Heating; 14.7 (520)	—
	Indoor Air (Hi)	m3/min (cfm)	(1) (2) (4)	Cooling; 15.4 (540) - 15.4 (540) Heating; 15.9 (560) - 15.9 (560)	—

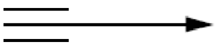
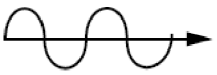
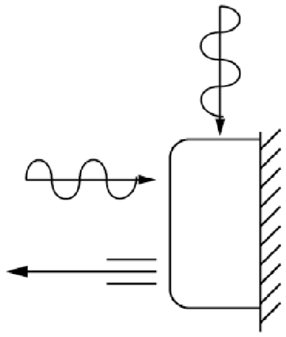
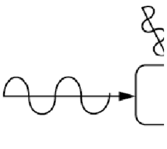
		Unit	CS-A18BK		CU-A1
			(3)	Cooling; 15.4 (540) Heating; 15.9 (560)	—
	Indoor Air (SHi)	m3/min (cfm)	(1) (2) (4)	Cooling; 15.9 (560) - 15.9 (560) Heating; 15.9 (560) - 15.9 (560)	—
			(3)	Cooling; 15.9 (560) Heating; 15.9 (560)	—
Noise Level		dB (A)	(1) (4)	Cooling; High 43 - 43, Low 38 - 38 Heating; High 42 - 42, Low 38 - 38	Cooling; Hi Heating; Hi
			(2)	Cooling; High 43 - 43, Low 38 - 38 Heating; High 42 - 42, Low 38 - 38	Cooling; Hi Heating; Hi
			(3)	Cooling; High 43, Low 38 Heating; High 42, Low 38	Cooling; Heating;
		Power level dB	(1)	Cooling; 54 - 54 Heating; 53 - 53	Cooling; Heating;
			(2)	Cooling; 55 - 55 Heating; 54 - 54	Cooling; Heating;
			(3) (4)	—	—
Electrical Data	Input Power	kW	(1) (4)	Cooling; 1.76 - 1.72 Heating; 1.71 - 1.65	
			(2)	Cooling; 1.81 - 1.76 Heating; 1.80 - 1.75	
			(3)	Cooling; 1.72 Heating; 1.65	
	Running Current	A	(1) (4)	Cooling; 7.8 - 8.0 Heating; 7.6 - 7.7	
			(3)	Cooling; 8.0 Heating; 7.7	
	EER	W/W (BTU/hW)	(1) (4)	Cooling; 3.01 - 3.08 (10.28 - 10.5	
			(2)	Cooling; 2.93 - 3.01 (10.00 - 10.2	
			(3)	Cooling; 3.08 (10.52)	
	COP	W/W (BTU/hW)	(1) (4)	Heating; 3.33 - 3.42 (11.35 - 11.7	
			(2)	Heating; 3.19 - 3.26 (10.89 - 11.0	
			(3)	Heating; 3.42 (11.70)	
	Starting Current	A	(1) (4)	38.0	

			Unit		CS-A18BK	CU-A1
				(3)	36.0	
Piping Connection Port (Flare piping)			inch inch		G ; Half Union 1/2” L ; Half Union 1/4”	G ; 3-way v L ; 3-way v
Pipe Size (Flare piping)			inch inch		G ; (gas side) 1/2” L ; (liquid side) 1/4”	G ; (gas si L ; (liquid s
Drain Hose	Inner diameter		mm		12	—
	Length		mm		650	—
Power Cord	Length		m		1.9	—
	Number of core-wire				3 (1.5 mm^2)	—
Dimensions	Height		inch (mm)		10 - 13/16 (275)	26 - 31/3
	Width		inch (mm)		39 - 9/32 (998)	31 - 1/2
	Depth		inch (mm)		8 - 9/32 (210)	11 - 13/1
Net Weight			lb (kg)		24 (11.0)	132 (6
Compressor		Type			—	Rotary (1 c rolling pis
	Motor	Type			—	Induction (
	Rated	Output	kW		—	1.5
Air Circulation		Type			Cross-flow Fan	Propelle
		Material			ASHT-18	PC + AES + G 15
	Motor	Type			Transistor (8-poles)	Induction (
		Input	W		44.8 - 53.5	151.2 -
	Rated	Output	W		30	72
	Fan Speed	Low	rpm	(1) (2) (4)	Cooling; 1,160 - 1,160 Heating; 1,240 - 1,240	635 - 6
				(3)	Cooling; 1,160 Heating; 1,240	600
		Medium	rpm	(1) (2) (4)	Cooling; 1,290 - 1,290 Heating; 1,290 - 1,290	—
				(3)	Cooling; 1,290 Heating; 1,290	—
		High	rpm	(1) (2) (4)	Cooling; 1,360 - 1,360 Heating; 1,400 - 1,400	990 -
				(3)	Cooling; 1,360 Heating; 1,400	950
		SuperHigh	rpm	(1) (2) (4)	Cooling; 1,400 - 1,400 Heating; 1,400 - 1,400	—
				(3)	Cooling; 1,400 Heating; 1,400	—

		Unit	CS-A18BK	CU-A1
Heat Exchanger	**Description**		**Evaporator**	**Conde**
	Tube material		**Copper**	**Copp**
	Fin material		**Aluminium (Pre Coat)**	**Aluminium (**
	Fin Type		**Slit Fin**	**Corrugat**
	Row / Stage		**(Plate fin configuration, forced draft**	
			2 × 15	**2 ×**
	FPI		**21**	**16**
	Size (W × H × L)	**mm**	**810 × 315 × 25.4**	**769.2 × 6 732.9**
Refrigerant Control Device			**—**	**Capillary**
Refrigeration Oil		**(cm3)**	**—**	**SUNISO 4 ATMOS M**
Refrigerant (R-22)		**g (oz)**	**—**	**1,640 (**
Thermostat			**Electronic Control**	**Mechanica**
Protection Device			**—**	**Inner Pro**
Capillary Tube	**Length**	**mm**	**—**	**Cooling; 816 365**
	Flow Rate	**l/min**	**—**	**Cooling; 10.6 26.**
	Inner Diameter	**mm**	**—**	**Cooling; 1.5 2.2**
Air Filter	**Material Style**		**P.P. Honeycomb**	**—**
Capacity Control			**Capillary Tube**	
Compressor Capacitor		**μ F, VAC**	**—**	**45 μ F, 3**
Fan Motor Capacitor		**μ F, VAC**	**—**	**3.0 μ F,**

Note:

- **Specifications are subject to change without notice for further improvement.**
- **(1) — CS-A18BKP/CU-A18BKP5 (Europe).**
- **(2) — CS-A18BKP-2/CU-A18BKP5-2 (Oceania).**
- **(3) — CS-A18BKP-3/CU-A18BKP5-3 (Argentina).**
- **(4) — CS-A18BKP-6/CU-A18BKP5-6 (Turkey).**

		Unit	CS-A24BK		CU-A2
Power Source		Phase, Voltage, Cycle	(1) (4)	Single, 230 - 220, 50 Hz	
			(2)	Single, 240 - 230, 50 Hz	
			(3)	Single, 220, 50 Hz	
Cooling Capacity		kW (BTU/h)	(1) (4)	6.67 - 6.84 (22,700 - 23,300)	
			(2)	6.67 - 6.67 (22,700 - 22,700)	
			(3)	6.84 (23,300)	
Heating Capacity		kW (BTU/h)	(1) (4)	7.72 - 7.85 (26,300 - 26,800)	
			(2)	7.80 - 7.77 (26,600 - 26,500)	
			(3)	7.85 (26,800)	
Moisture Removal		l/h (Pint/h)	(1) (3) (4)	3.9 (8.2)	
			(2)	3.8 (8.0)	
Airflow Method		OUTLET  INTAKE 	SIDE VIEW 		TOP V 
Air Volume	Indoor Air (Lo)	m3/min (cfm)	(1) (2) (4)	Cooling; 14.4 (510) - 14.4 (510) Heating; 15.6 (550) - 15.6 (550)	—
			(3)	Cooling; 14.4 (510) Heating; 15.6 (550)	—

		Unit		CS-A24BK	CU-A2
	Indoor Air (Me)	m3/min (cfm)	(1) (2) (4)	Cooling; 16.4 (580) - 16.4 (580) Heating; 16.4 (580) - 16.4 (580)	—
			(3)	Cooling; 16.4 (580) Heating; 16.4 (580)	—
	Indoor Air (Hi)	m3/min (cfm)	(1) (2) (4)	Cooling; 17.5 (620) - 17.5 (620) Heating; 18.1 (640) - 18.1 (640)	—
			(3)	Cooling; 17.5 (620) Heating; 18.1 (640)	—
	Indoor Air (SHi)	m3/min (cfm)	(1) (2) (4)	Cooling; 18.1 (640) - 18.1 (640) Heating; 18.1 (640) - 18.1 (640)	—
			(3)	Cooling; 18.1 (640) Heating; 18.1 (640)	—
Noise Level		dB (A)	(1) (4)	Cooling; High 47 - 47, Low 41 - 41 Heating; High 46 - 46, Low 41 - 41	Cooling; Hig Heating; Hig
			(2)	Cooling; High 47 - 47, Low 41 - 41 Heating; High 46 - 46, Low 41 - 41	Cooling; Hig Heating; Hig
			(3)	Cooling; High 47, Low 41 Heating; High 46, Low 41	Cooling; H Heating;
		Power level dB	(1)	Cooling; 58 - 58 Heating; 57 - 57	Coolling; Heating;
			(2)	Cooling; 59 - 59 Heating; 59 - 59	Coolling; Heating;
			(3) (4)	—	—
Electrical Data	Input Power	kW	(1) (4)	Cooling; 2.80 - 2.60 Heating; 2.76 - 2.64	
			(2)	Cooling; 2.87 - 2.80 Heating; 2.86 - 2.81	
			(3)	Cooling; 2.60 Heating; 2.64	
	Running Current	A	(1) (4)	Cooling; 13.2 - 12.6 Heating; 13.0 - 12.9	
			(3)	Cooling; 12.6 Heating; 12.9	

		Unit		CS-A24BK	CU-A2
	EER	W/W (BTU/hW)	(1) (4)	Cooling; 2.38 - 2.63 (8.11 - 8.96	
			(2)	Cooling; 2.32 - 2.38 (7.91 - 8.11	
			(3)	Cooling; 2.63 (8.96)	
	COP	W/W (BTU/hW)	(1) (4)	Heating; 2.80 - 2.97 (9.53 - 10.15	
			(2)	Heating; 2.73 - 2.77 (9.30 - 9.43	
			(3)	Heating; 2.97 (10.15)	
	Starting Current	A	(1) (4)	66.0	
			(3)	64.0	
Piping Connection Port (Flare piping)		inch inch		G ; Half Union 5/8” L ; Half Union 1/4”	G ; 3-way v L ; 3-way v
Pipe Size (Flare piping)		inch inch		G ; (gas side) 5/8” L ; (liquid side) 1/4”	G ; (gas si L ; (liquid s
Drain	Inner diameter	mm		12	—
Hose	Length	mm		650	—
Power Cord	Length	m		1.9	—
	Number of core-wire			3 (2.5 mm^2)	—
Dimensions	Height	inch (mm)		10 - 13/16 (275)	26 - 31/3
	Width	inch (mm)		39 - 9/32 (998)	31 - 1/2
	Depth	inch (mm)		8 - 9/32 (210)	11 - 13/1
Net Weight		lb (kg)		24 (11.0)	139 (6
Compressor	Type			—	Rotary (1 c rolling pist
	Motor Type			—	Induction (
	Rated Output	kW		—	2.2

			Unit		CS-A24BK	CU-A2
Air Circulation		**Type**			**Cross-flow Fan**	**Propelle**
		Material			**ASHT-18**	**PC + AES + G 15**
	Motor	**Type**			**Transistor (8-poles)**	**Induction**
		Input	**W**		**44.8 - 53.5**	**190.0 -**
	Rated	**Output**	**W**		**30**	**10**
	Fan Speed	**Low**	**rpm**	**(1) (2) (4)**	**Cooling; 1,260 - 1,260 Heating; 1,360 - 1,360**	**680 -**
				(3)	**Cooling; 1,260 Heating; 1,360**	**63**
		Medium	**rpm**	**(1) (2) (4)**	**Cooling; 1,430 - 1,430 Heating; 1,430 - 1,430**	**—**
				(3)	**Cooling; 1,430 Heating; 1,430**	**—**
		High	**rpm**	**(1) (2) (4)**	**Cooling; 1,530 - 1,530 Heating; 1,580 - 1,580**	**1,170 -**
				(3)	**Cooling; 1,530 Heating; 1,580**	**1,14**
		SuperHigh	**rpm**	**(1) (2) (4)**	**Cooling; 1,580 - 1,580 Heating; 1,580 - 1,580**	**—**
				(3)	**Cooling; 1,580 Heating; 1,580**	**—**
Heat Exchanger	**Description**				**Evaporator**	**Conde**
	Tube material				**Copper**	**Copp**
	Fin material				**Aluminium (Pre Coat)**	**Aluminium (**
	Fin Type				**Slit Fin**	**Corrugat**
	Row / Stage				**(Plate fin configuration, forced draf**	
					2 × 15	**2 ×**
	FPI				**21**	**16**
	Size (W × H × L)		**mm**		**810 × 315 × 25.4**	**769.2 732.9 4**
Refrigerant Control Device					**—**	**Capillar**
Refrigeration Oil			**(cm^3)**		**—**	**SUNISO 4 ATMOS M6**
Refrigerant (R-22)			**g (oz)**		**—**	**1,770 (**
Thermostat					**Electronic Control**	**Mechanica**
Protection Device					**—**	**Inner Pr**

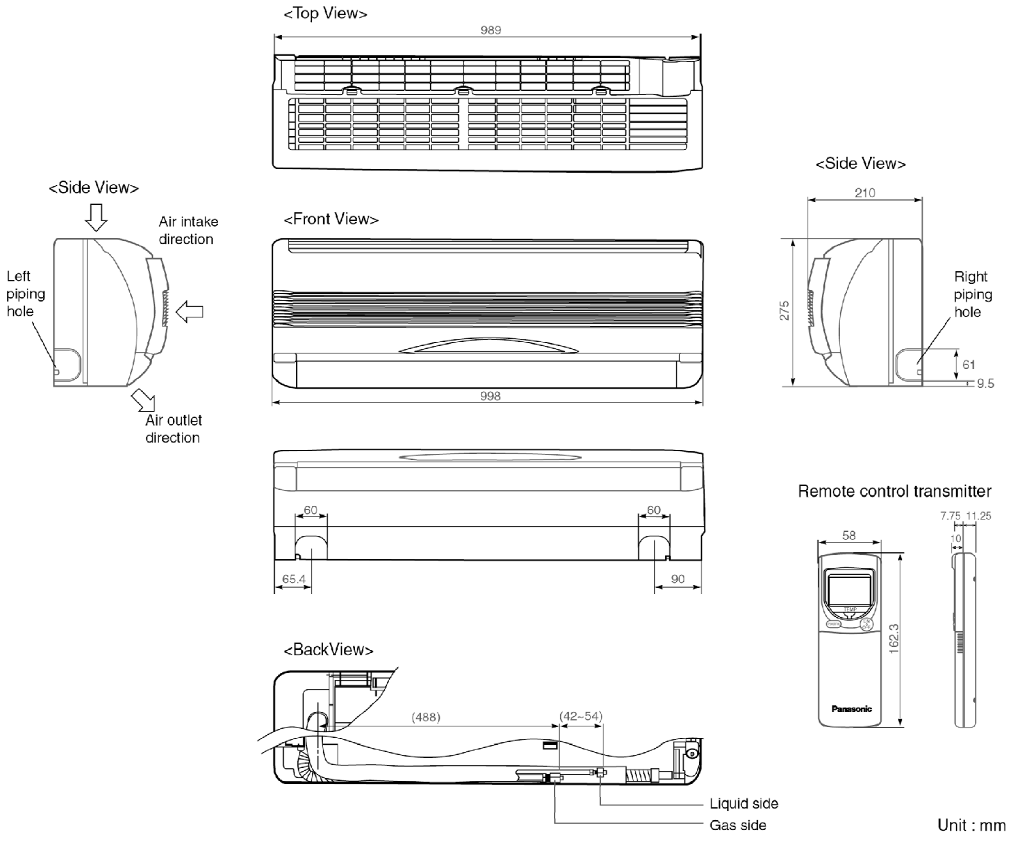
		Unit	CS-A24BK	CU-A2
Capillary Tube	**Length**	**mm**	**—**	**Cooling; 663** **550**
	Flow Rate	**l/min**	**—**	**Cooling; 13.0** **29.**
	Inner Diameter	**mm**	**—**	**Cooling; 1.6,** **2.4**
Air Filter	**Material** **Style**		**P.P.** **Honeycomb**	**—**
Capacity Control			**Capillary Tube**	
Compressor Capacitor		**μF, VAC**	**—**	**50 μF, 3**
Fan Motor Capacitor		**μF, VAC**	**—**	**3.0 μF,**

Note:

- **Specifications are subject to change without notice for further improvement.**
- **(1) — CS-A24BKP/CU-A24BKP5 (Europe).**
- **(2) — CS-A24BKP-2/CU-A24BKP5-2 (Oceania).**
- **(3) — CS-A24BKP-3/CU-A24BKP5-3 (Argentina).**
- **(4) — CS-A24BKP-6/CU-A24BKP5-6 (Turkey).**

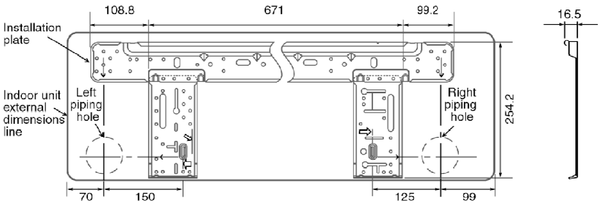
4. Dimensions

CS-A18BK / CS-A24BK

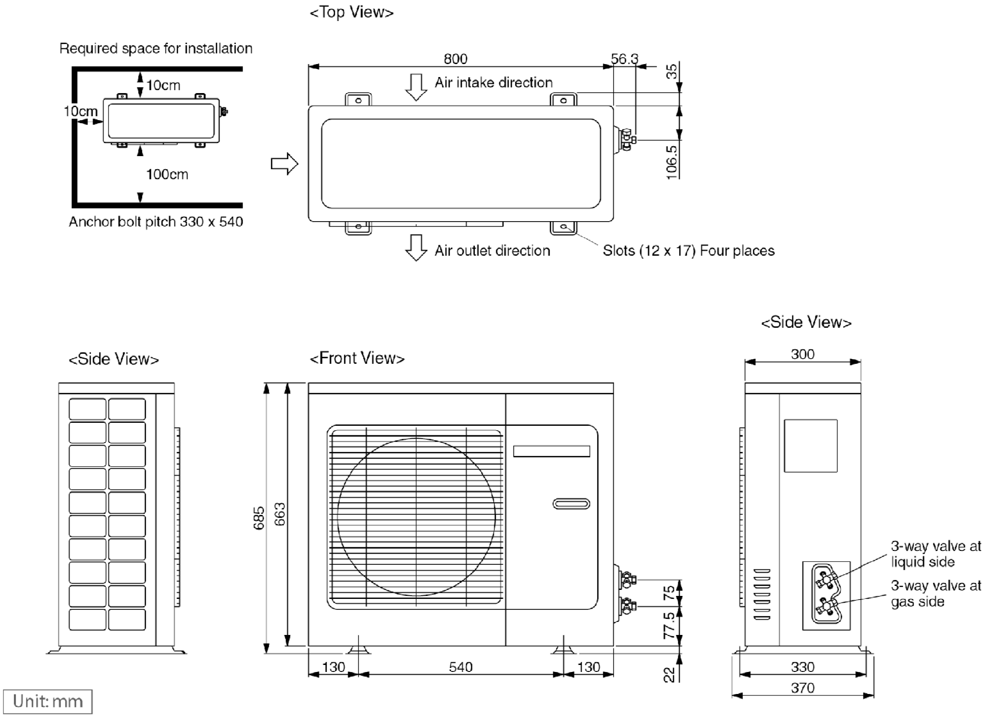

<Top View>
989
<Side View>
Air intake direction
Left piping hole
Air outlet direction
<Front View>
998
<Side View>
210
275
Right piping hole
61
9.5
60
60
65.4
90
Remote control transmitter
7.75
11.25
10
58
162.3
Panasonic
<BackView>
(488)
(42~54)
Liquid side
Gas side

Unit : mm

Relative position between the indoor unit and the installation plate <Front View>

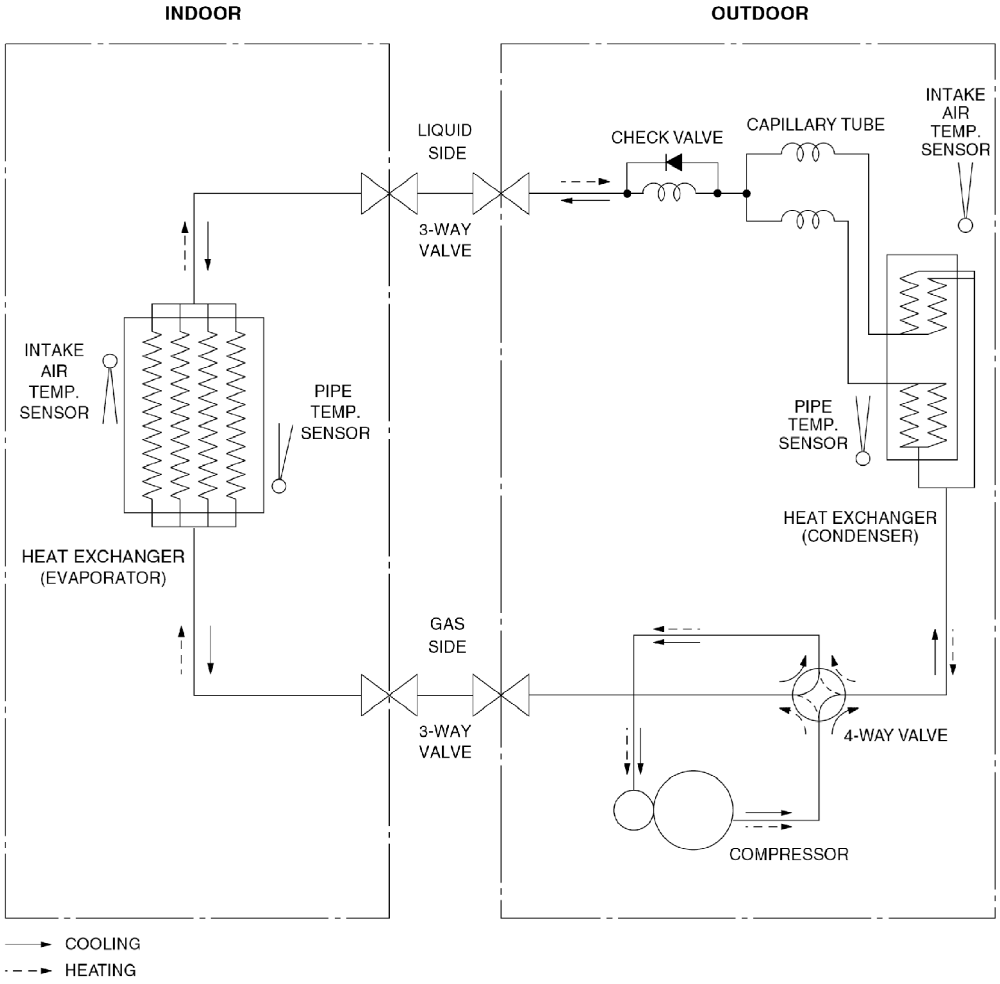

108.8
671
99.2
16.5
Installation plate
Indoor unit external dimensions line
Left piping hole
Right piping hole
254.2
70
150
125
99

CU-A18BK / CU-A24BK


<Top View>
Required space for installation
10cm
10cm
100cm
Anchor bolt pitch 330 x 540
800
56.3
35
106.5
Air intake direction
Air outlet direction
Slots (12 x 17) Four places
<Side View>
<Front View>
<Side View>
300
685
663
75
77.5
22
130
540
130
330
370
3-way valve at liquid side
3-way valve at gas side
Unit: mm

5. Refrigeration Cycle Diagram

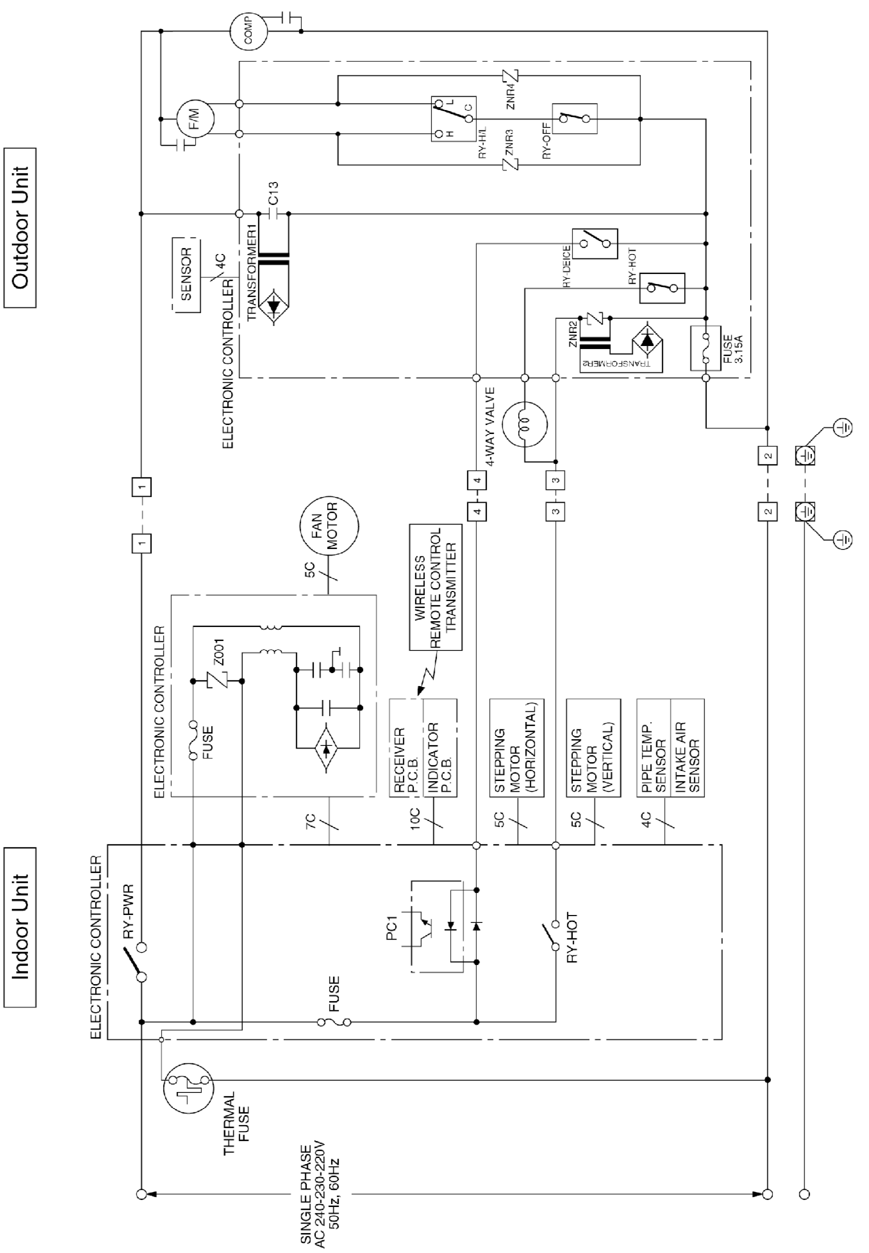
CS-A18BK / CU-A18BK
CS-A24BK / CU-A24BK



INDOOR
OUTDOOR
LIQUID SIDE
3-WAY VALVE
CHECK VALVE
CAPILLARY TUBE
INTAKE AIR TEMP. SENSOR
INTAKE AIR TEMP. SENSOR
PIPE TEMP. SENSOR
HEAT EXCHANGER (EVAPORATOR)
PIPE TEMP. SENSOR
HEAT EXCHANGER (CONDENSER)
GAS SIDE
3-WAY VALVE
4-WAY VALVE
COMPRESSOR
COOLING
HEATING

6. Block Diagram

CS-A18BK / CU-A18BK
CS-A24BK / CU-A24BK

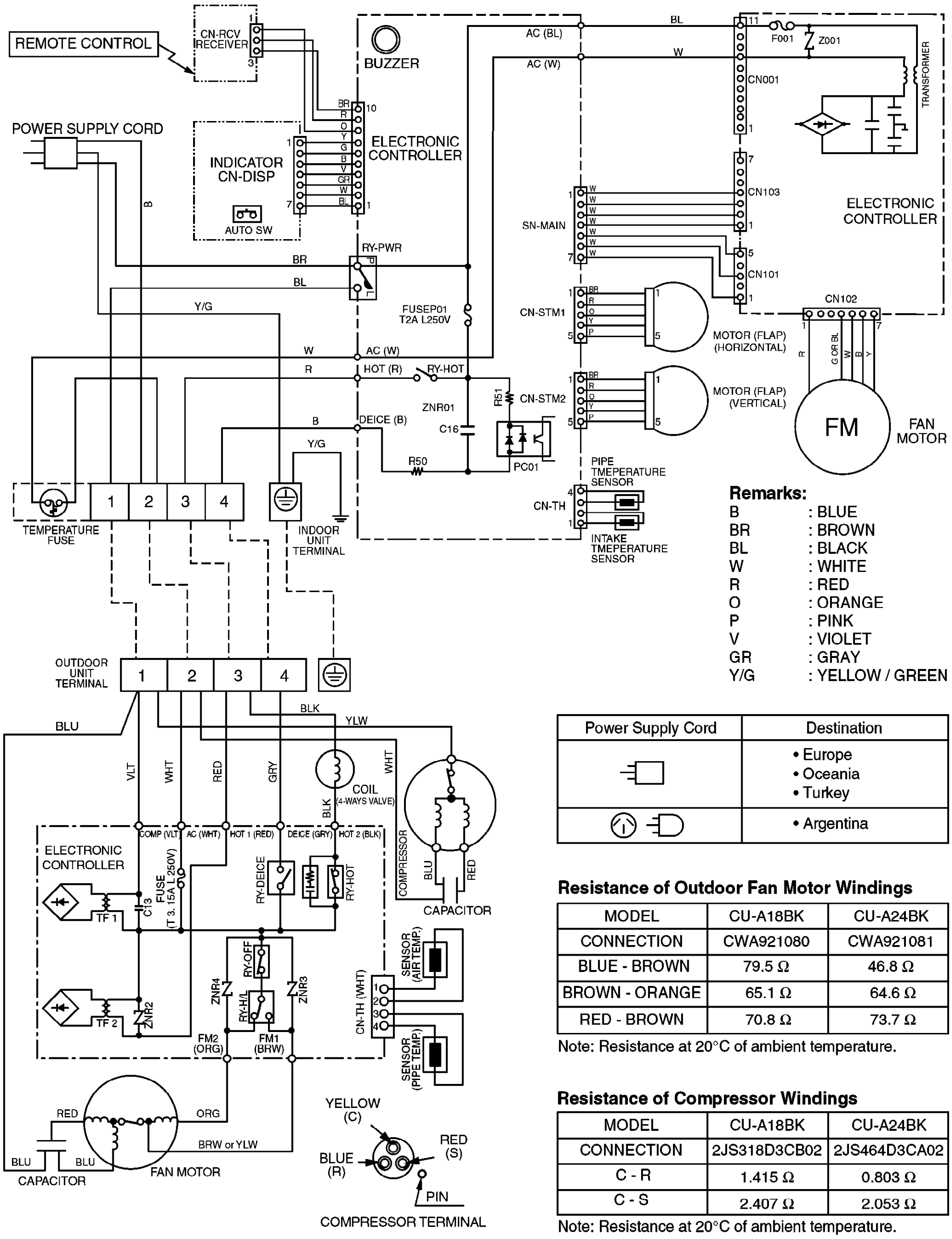

Outdoor Unit
Indoor Unit
COMP
F/M
ZNR4
ZNR3
RY-H/L
H
L
C
RY-OFF
C13
SENSOR
4C
TRANSFORMER1
ELECTRONIC CONTROLLER
RY-DEICE
RY-HOT
ZNR2
TRANSFORMER2
FUSE 3.15A
4-WAY VALVE
1
2
3
4
FAN MOTOR
5C
WIRELESS REMOTE CONTROL TRANSMITTER
ELECTRONIC CONTROLLER
Z001
FUSE
RECEIVER P.C.B.
INDICATOR P.C.B.
STEPPING MOTOR (HORIZONTAL)
STEPPING MOTOR (VERTICAL)
PIPE TEMP. SENSOR
INTAKE AIR SENSOR
7C
10C
5C
5C
4C
ELECTRONIC CONTROLLER
RY-PWR
PC1
FUSE
RY-HOT
THERMAL FUSE
SINGLE PHASE
AC 240-230-220V
50Hz, 60Hz

※ ▭ Indicates the electronic control unit.

※ "C" Indicates the number of core wires. (Example: 6C=6 core wires)

7. Wiring Diagram

CS-A18BK / CU-A18BK
CS-A24BK / CU-A24BK


REMOTE CONTROL
CN-RCV RECEIVER
BUZZER
POWER SUPPLY CORD
INDICATOR CN-DISP
AUTO SW
ELECTRONIC CONTROLLER
AC (BL)
AC (W)
BL
W
F001
Z001
CN001
TRANSFORMER
CN103
ELECTRONIC CONTROLLER
SN-MAIN
CN101
CN102
RY-PWR
BR
BL
Y/G
B
FUSEP01 T2A L250V
CN-STM1
MOTOR (FLAP) (HORIZONTAL)
W
R
AC (W)
HOT (R)
RY-HOT
ZNR01
R51
CN-STM2
MOTOR (FLAP) (VERTICAL)
FM
FAN MOTOR
DEICE (B)
C16
R50
PC01
PIPE TMEPERATURE SENSOR
CN-TH
INTAKE TMEPERATURE SENSOR
1
2
3
4
TEMPERATURE FUSE
INDOOR UNIT TERMINAL
OUTDOOR UNIT TERMINAL
BLU
BLK
YLW
VLT
WHT
RED
GRY
COIL (4-WAYS VALVE)
COMP (VLT)
AC (WHT)
HOT 1 (RED)
DEICE (GRY)
HOT 2 (BLK)
ELECTRONIC CONTROLLER
TF 1
TF 2
C13
FUSE (T 3. 15A L 250V)
RY-DEICE
RY-HOT
COMPRESSOR
CAPACITOR
ZNR2
ZNR4
ZNR3
RY-OFF
RY-H/L
FM2 (ORG)
FM1 (BRW)
CN-TH (WHT)
SENSOR (AIR TEMP)
SENSOR (PIPE TEMP)
RED
ORG
BRW or YLW
BLU
CAPACITOR
FAN MOTOR
YELLOW (C)
RED (S)
BLUE (R)
PIN
COMPRESSOR TERMINAL

Remarks:

B : BLUE
BR : BROWN
BL : BLACK
W : WHITE
R : RED
O : ORANGE
P : PINK
V : VIOLET
GR : GRAY
Y/G : YELLOW / GREEN

Power Supply Cord	Destination
	• Europe • Oceania • Turkey
	• Argentina

Resistance of Outdoor Fan Motor Windings

MODEL	CU-A18BK	CU-A24BK
CONNECTION	CWA921080	CWA921081
BLUE - BROWN	79.5 Ω	46.8 Ω
BROWN - ORANGE	65.1 Ω	64.6 Ω
RED - BROWN	70.8 Ω	73.7 Ω

Note: Resistance at 20°C of ambient temperature.

Resistance of Compressor Windings

MODEL	CU-A18BK	CU-A24BK
CONNECTION	2JS318D3CB02	2JS464D3CA02
C - R	1.415 Ω	0.803 Ω
C - S	2.407 Ω	2.053 Ω

Note: Resistance at 20°C of ambient temperature.

8. Operation Details

8.1. Cooling Mode Operation

Cooling in operation according to Remote Control setting.

Time Delay Safety Control (3 minutes)

- When the compressor is stopped by Remote Control, it restarts after 3 minutes when the Remote Control is turned ON.
- When the setting temperature is reached during cooling operation, the compressor stops and it will not start for 3 minutes.

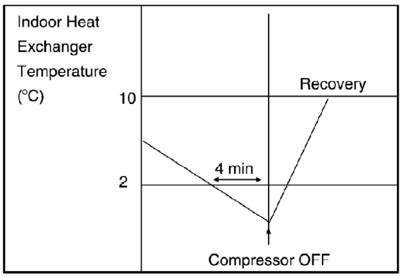
7 minutes Time Save Control

- The compressor will start automatically if it has stopped for 7 minutes even if the room temperature is between the compressor ON temperature and OFF temperature.

Anti-Freezing Control

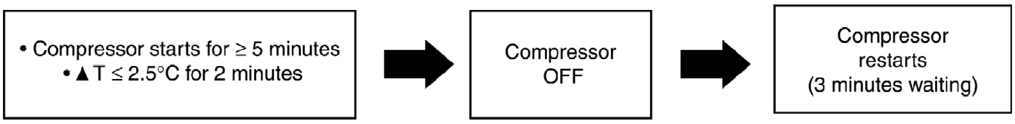
- If the temperature of the indoor heat exchanger falls continuously below 2°C for 4 minutes or more, the compressor turns off to protect the indoor heat exchanger from freezing. The fan speed setting remains the same.
- Compressor will restart again when the indoor heat exchanger temperature rises to 10°C (Recovery).

※ 3 minutes waiting of Time Delay Safety Control is valid for Cooling Operation.



Compressor Reverse Rotation Protection Control

- If the compressor is operating continuously for 5 minutes or longer and the temperature difference between intake air and indoor heat exchanger is 2.5°C or less for 2 minutes, compressor will stop and restart automatically. / (Time Delay Safety Control is valid)


• Compressor starts for ≥ 5 minutes
• ▲T ≤ 2.5°C for 2 minutes
Compressor OFF
Compressor restarts (3 minutes waiting)

▲ T = Intake air temperature - Indoor heat exchanger temperature / This is to protect reverse rotation of the compressor when there is a instantaneous power failure.

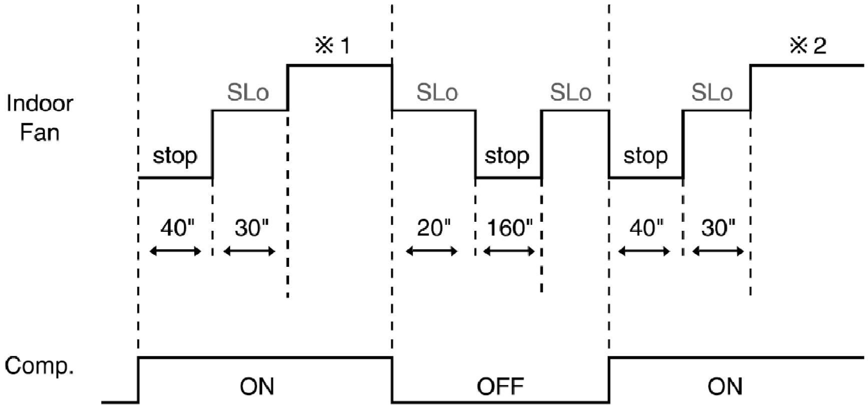
Anti-Dew Formation Control

- Purpose is to prevent dew formation on indoor unit air discharge area.
- When the following conditions occur for 30 minutes continuously, anti-dew formation is controlled by indoor fan speed shift to low (Changed to Lo$_+$):
- Indoor intake air temperature is more than 24°C and less than 30°C.
- Remote Control setting temperature is less than 25°C.
- Compressor is on.
- Cooling operation mode.
- Indoor Fan motor operate at Low fan speed.
- This control is cancelled immediately when above condition is changed.

Automatic Fan Speed Mode

When Automatic Fan Speed is selected at Remote Control during cooling operation.

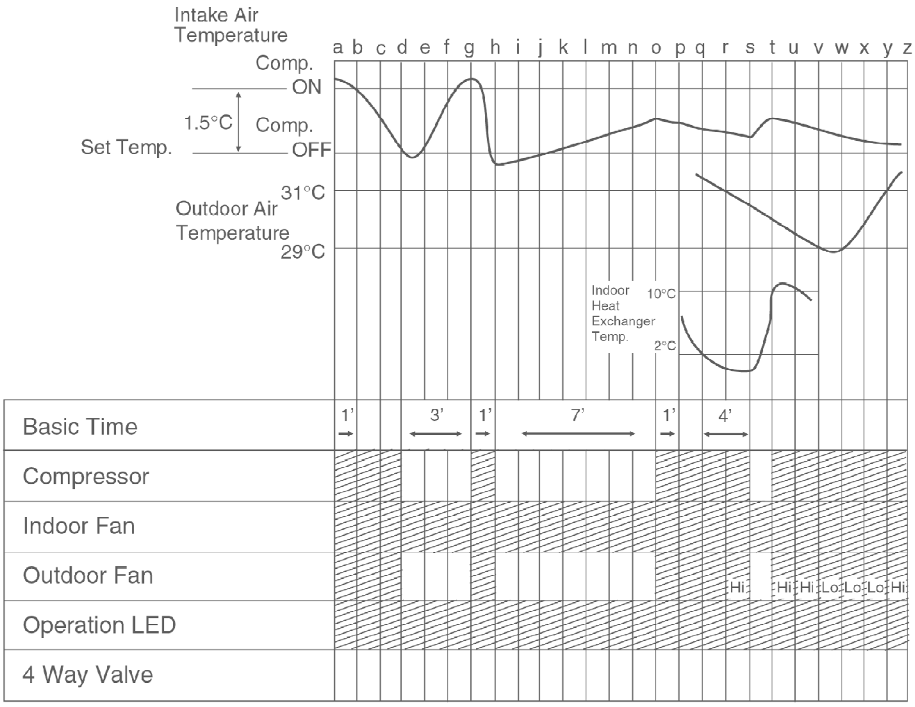
- Fan speed rotates in the range of Hi to Me.
- Deodorizing Control.


※1
※2
Indoor Fan
SLo
SLo
SLo
SLo
stop
stop
stop
40"
30"
20"
160"
40"
30"
Comp.
ON
OFF
ON

※ 1 Fan Speed is Hi until the compressor stops (when the room temperature reaches setting temperature).

※ 2 Fan Speed is Me after the compressor restarts.

Cooling Operation Time Diagram


Intake Air Temperature
Comp. ON
1.5°C
Comp. OFF
Set Temp.
Outdoor Air Temperature
31°C
29°C
Indoor Heat Exchanger Temp.
10°C
2°C
a b c d e f g h i j k l m n o p q r s t u v w x y z
Basic Time
1'
3'
1'
7'
1'
4'
Compressor
Indoor Fan
Outdoor Fan
Hi
Hi
Hi
Lo
Lo
Lo
Hi
Operation LED
4 Way Valve

<Description of operation>
d – g : Time Delay Safety Control (waiting for 3 minutes)
g – h : 60 sec. Forced Operation
h – o : 7 min. Time Save Control
q – t : Anti Freezing Control
v – y : Outdoor Fan Control

▨ Operation
☐ Stop

8.2. Soft Dry Mode Operation

- The unit starts cooling operation until the room temperature reaches the setting temperature set on the Remote Control, and

then Soft Dry operation will start.

- During Soft Dry operation, the Indoor Fan will operate at SLo speed.
- Once room temperature reaches below Soft Dry OFF temperature. Indoor Fan, Compressor and Outdoor Fan stop for 6 minutes.

Time Delay Safety Control

- Once the compressor stops, it will not start for 3 minutes during Cooling operation.

Anti-Freezing Control

- Same as Anti-Freezing Control for Cooling Mode operation. (For Soft Dry region, 6 minutes waiting is valid during compressor stops.)

Compressor Reverse Rotation Protection Control

- Same as Compressor Reverse Rotation Protection Control for Cooling Mode Operation. (For Soft Dry region, 6 minutes waiting is valid during compressor stops.)

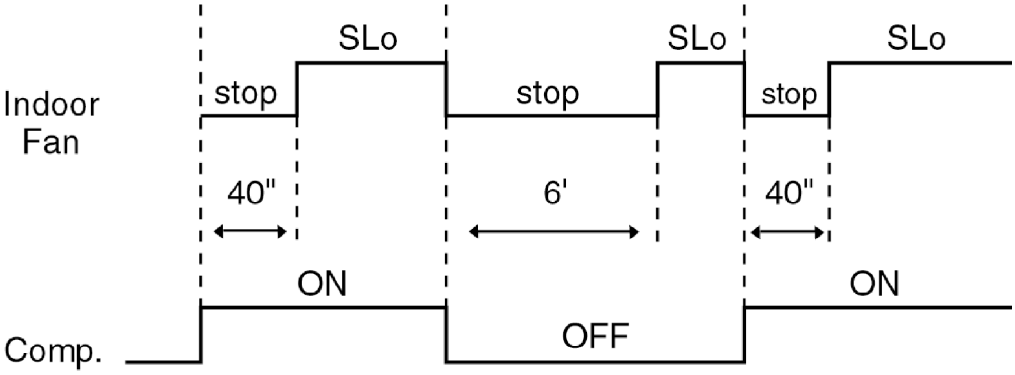
Anti-Dew Formation Control

- Same as Anti-Dew Formation Control for Cooling Mode operation.

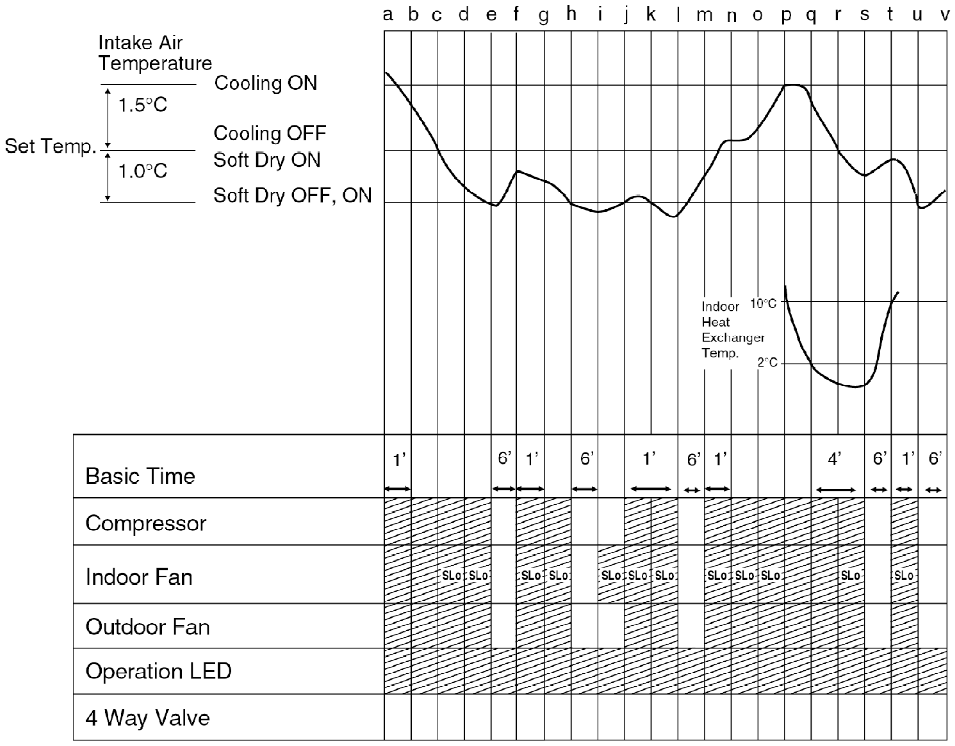
Automatic Fan Speed Mode

When Automatic Fan Speed is selected at Remote Control during Soft Dry operation.

- Fan speed off and on at SLo speed.
- Deodorizing Control.


Indoor Fan
Comp.
stop
SLo
stop
SLo
stop
SLo
40"
6'
40"
ON
OFF
ON

Soft Dry Operation Time Diagram


a b c d e f g h i j k l m n o p q r s t u v
Intake Air Temperature
Cooling ON
1.5°C
Set Temp.
Cooling OFF
Soft Dry ON
1.0°C
Soft Dry OFF, ON
Indoor Heat Exchanger Temp.
10°C
2°C
Basic Time
Compressor
Indoor Fan
Outdoor Fan
Operation LED
4 Way Valve
1'
6'
1'
6'
1'
6'
1'
4'
6'
1'
6'
SLo

<Description of operation>
a – c, p~r : Cooling Operation
c – p : Soft Dry Operation
e – f : Soft Dry OFF
j – l : 60 sec. Forced Operation
q – t : Anti Freezing Control

▨ Operation
☐ Stop

8.3. Heating Mode Operation

- Heating in operation according to Remote Control setting. /

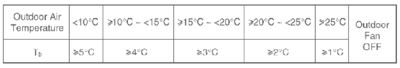
Time Delay Safety Control

- **When the compressor is stopped by Power Switch, Remote Control or there is a power failure, it restarts after 3 minutes when the Power Switch, Remote Control is turned ON or the power supply is resumed.**
- **When the setting temperature is reached during heating operation, the compressor stops and it will not start for 4 minutes.**

Overload Protection Control

(a) Outdoor Fan Control

- **If the temperature of the Outdoor Heat Exchanger less than -3°C, Outdoor Fan is ON. The Outdoor Fan stop, when Outdoor Heat Exchanger temperature is T_b or more according to Outdoor Air Temperature region as table below:**
  The Outdoor Fan restarts when the indoor heat exchanger temperature falls to 49°C.

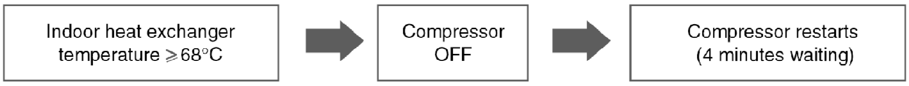


Outdoor Air Temperature	<10°C	⩾10°C ~ <15°C	⩾15°C ~ <20°C	⩾20°C ~ <25°C	⩾25°C	Outdoor Fan OFF
T_b	⩾5°C	⩾4°C	⩾3°C	⩾2°C	⩾1°C	

During starting of Heating mode and after deice, Outdoor Fan ON for 90 sec. (Hi).

(b) Compressor High Pressure Control

- **If the indoor heat exchanger becomes 68°C or more, the compressor will stop and restart automatically.**
  (Time Delay Safety Control - 4 minutes waiting).

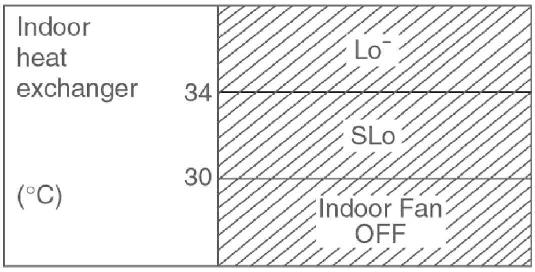

Indoor heat exchanger temperature ⩾68°C
Compressor OFF
Compressor restarts (4 minutes waiting)

4-way Valve Control

- **4-way valve ON during Heating operation, except deicing operation.**
- **When the unit is switched to "OFF" during Heating operation, 4-way valve stays at Heating position for 5 minutes.**

Hot Start Control

When Heating operation starts, Indoor Fan will not start until the indoor heat exchanger reaches 30°C as diagram shown.

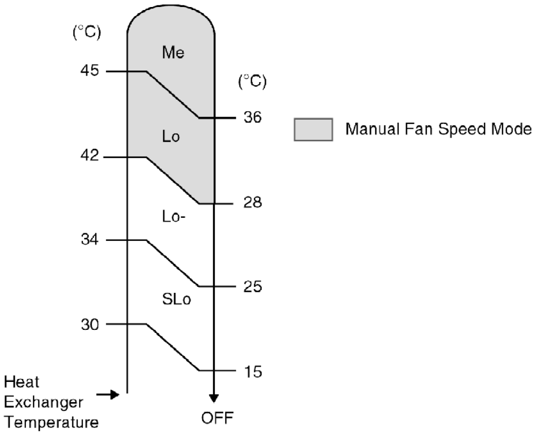

Indoor heat exchanger
(°C)
34
30
Lo-
SLo
Indoor Fan OFF

Hot Start is completed when indoor heat exchanger reaches 42°C.
Maximum Hot start duration = 4 minutes. After 4 minutes,
Hot start operation will be shifted to normal Heating operation.

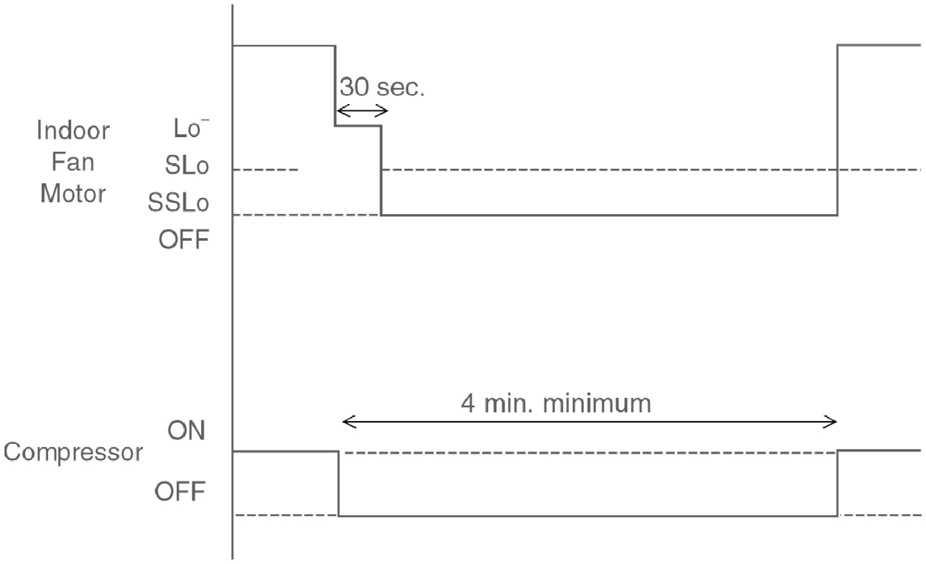
Automatic Fan Speed Mode

When Automatic Fan Speed is selected at Remote Control during heating operation.

- **Fan speed rotates in the range of Me → SLo according to the heat exchanger temperature.**

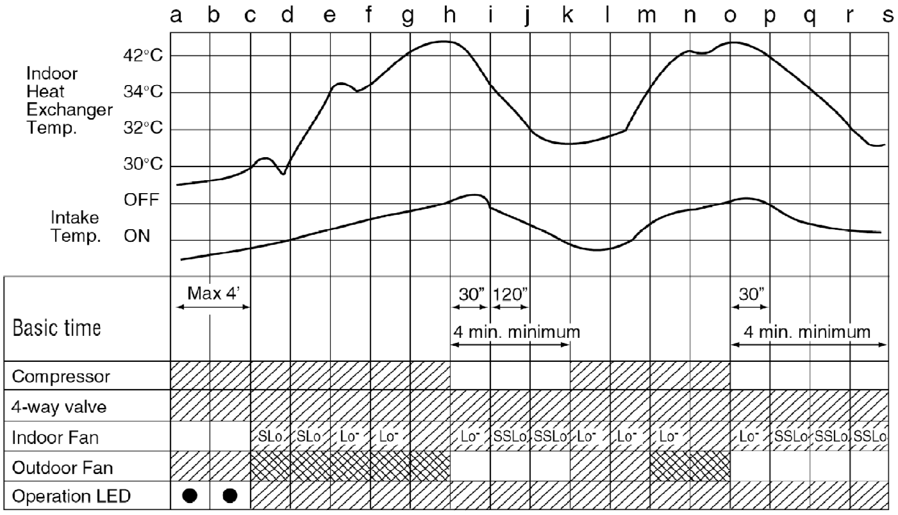

(°C)
45
42
34
30
Me
Lo
Lo-
SLo
(°C)
36
28
25
15
OFF
Heat Exchanger Temperature
Manual Fan Speed Mode

Anti Cold Draft Control


Indoor
Fan
Motor
Lo⁻
SLo
SSLo
OFF
30 sec.
Compressor
ON
OFF
4 min. minimum

When COMP = Thermal OFF, indoor fan speed immediately changed to Lo⁻ for 30 sec., follow by SSLo speed until COMP = ON.

Heating Operation Time Diagram


a b c d e f g h i j k l m n o p q r s
Indoor
Heat
Exchanger
Temp.
42°C
34°C
32°C
30°C
OFF
Intake
Temp.
ON
Basic time
Max 4'
30"
120"
4 min. minimum
30"
4 min. minimum
Compressor
4-way valve
Indoor Fan
Outdoor Fan
Operation LED
SLo
SLo
Lo⁻
Lo⁻
Lo⁻
SSLo
SSLo
Lo⁻
Lo⁻
Lo⁻
Lo⁻
SSLo
SSLo
SSLo

<Description of operation>

a – c : Hot start (Indoor Fan = OFF)
c – d : Hot start (Indoor Fan = SLo)
h – k, o – s : Anti Cold Draft Control

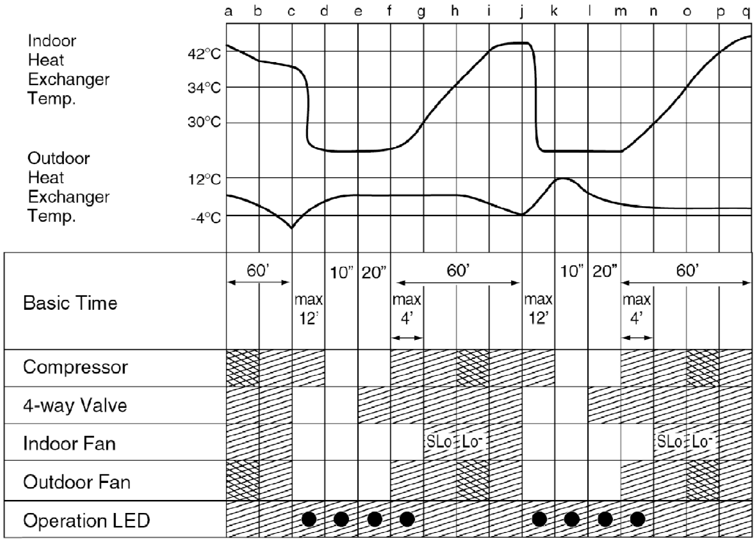
● : Blinking
▨ Operation
☐ Stop
▩ Operation or stop

Deicing Control

Deice starts to prevent frosting at outdoor heat exchanger.

- **Normal Deicing**
  Deice operation detection commences in Heating operation starts or 60 minutes after previous deice operation. If the outdoor piping temperature drops to -4°C or 50 sec. continuously during compressor is in operation, deice will start.
  (There is no detection during Outdoor Fan stops.)
- **Overload Deicing**
  During heating operation, if the outdoor Fan OFF duration (due to overload control) is accumulated up to 60 minutes and after compressor starts for 1 minutes, deicing starts.
- **Deicing ends when**
  (a) 12 minutes after deicing operation starts;
  (b) The outdoor piping temperature rises to about 12°C.
- **After deicing operation, compressor stops for 30 seconds and 4-way valve stays at cooling position for 10 seconds.**

a) Normal Deicing Time Diagram

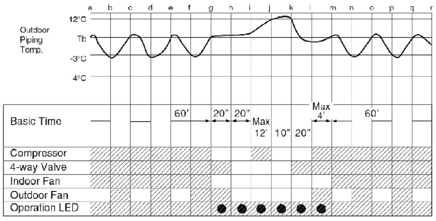

a b c d e f g h i j k l m n o p q
Indoor Heat Exchanger Temp.
42°C
34°C
30°C
Outdoor Heat Exchanger Temp.
12°C
-4°C
Basic Time
60'
max 12'
10"
20"
max 4'
60'
max 12'
10"
20"
max 4'
60'
Compressor
4-way Valve
Indoor Fan
SLo
Lo
Outdoor Fan
Operation LED

<Description of operation>

a – c : Deicing operation judging condition established
c – f : Deicing operation
f – g : Hot start (add 4 minute delay timing)

● : Blinking
▨ Operation
☐ Stop
▩ Operation or stop

(b) Overload Deicing Time Diagram


a b c d e f g h i j k l m n o p q r
Outdoor Piping Temp.
12°C
Tb
-3°C
4°C
Basic Time
60'
20"
20"
Max 12'
10"
20"
Max 4'
60'
Compressor
4-way Valve
Indoor Fan
Outdoor Fan
Operation LED

<Description of operation>

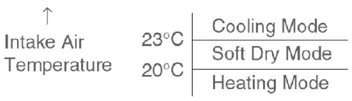
a – i : Overload control
i – l : Overload deicing
l – m : Hot start
m – r : Overload control
g – i : Preparation for overload deicing (For normal R22 control, operation for g – i is not included, applicable only for new refrigerant model).

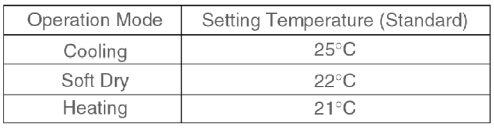
● : Blinking
▨ Operation
☐ Stop

8.4. Automatic Mode Operation

1. **When the Automatic Mode Operation is selected, the indoor fan operates at SLo fan speed for 25 seconds to sense intake air temperature and determine the 1st operation mode. If indoor intake air temperature is less than 16°C, Heating mode will immediate operate.**

Standard for Determining Operation Mode
1st Judgement





Operation Mode	Setting Temperature (Standard)
Cooling	25°C
Soft Dry	22°C
Heating	21°C

2. Operation mode will be determine again after 1 hour of operation, if the room temperature reaches to set temperature and compressor off time is over 7 minutes 30 seconds continuously.

※ The present operation mode will be continued, if the room temperature does not reach to set temperature (Compressor keeps running) eventhough after 1 hour from automatic operation m started.

Standard for Determining Operation Mode
2nd Judgement onwards

Present Mode	Judgement	Next Mode		
		Cooling	Soft Dry	Heating
Cooling	23°C | Cooling Heating	O (Judgement: 23°C & Above)	Not Applicable	O (Judgement Below 23°C
Soft Dry	23°C | Soft Dry Heating	Not Applicable	O (Judgement: 23°C & Above)	O (Judgement Below 23°C
Heating	Cooling 23°C | Heating	O (Judgement: Above 23°C)	Not Applicable	O (Judgement 23°C & belo

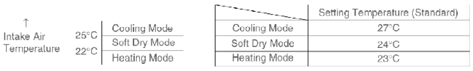
※ Automatic Set Temperature
Refer 3. as below.

3. Automatic Set Temperature

For each operation, set temperature will automatically set as shown below.
However it can be selected 2°C higher or 2°C lower from standard set temperature by pressing the "Room Temperature Setting button".

Operation	Hi	(Standard)	Lo
	(+2°C)	(±0°C)	(-2°C)
Cooling	**27°C**	**25°C**	**23°C**
Soft Dry	**24°C**	**22°C**	**20°C**
Heating	**23°C**	**21°C**	**19°C**

- **The mode judging temperature and standard setting temperature can be increased by 2°C, by open the circuit of JX1 at indoor electronic controller.**



	Setting Temperature (Standard)
Cooling Mode	27°C
Soft Dry Mode	24°C
Heating Mode	23°C

8.5. Sleep Mode Auto Operation

Cooling or Soft Dry Operation

Purpose is to obtain a comfortable room temperature while sleeping. When you press the SLEEP Mode, the following movement will start to avoid overcooling.

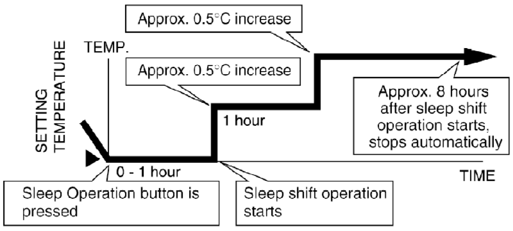
- **Sleep shift operation starts, when the room temperature reaches the setting temperature or after 1 hour of operation.**
- **The setting temperature will be risen by 0.5°C at the start of operation and by 0.5°C one hour later .**
- **The airflow volume will automatically change to Lo fan speed.**
- **Sleep Mode operation time is 8 hours, the operation will be stop after 8 hour.**
- **When used together with the Timer, the Timer has priority.**

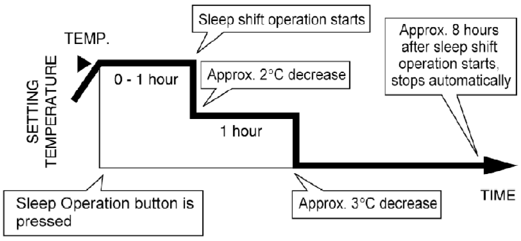
Heating Operation

Purpose is to obtain a comfortable room temperature while sleeping. When you press the SLEEP Mode, the following movement will start to avoid overheating.

- **Sleep shift operation starts, when the room temperature reaches the setting temperature or after 1 hour of operation.**
- **The setting temperature will be decrease by 2°C at the start of operation and by 3°C one hour later.**

- **The fan speed refer to Indoor Fan Motor Control.**
- **Sleep Mode operation time is 8 hours, the operation will be stop after 8 hour.**
- **When used together with the Timer, the Timer has priority.**


Approx. 0.5°C increase
TEMP.
Approx. 0.5°C increase
SETTING TEMPERATURE
1 hour
Approx. 8 hours after sleep shift operation starts, stops automatically
0 - 1 hour
TIME
Sleep Operation button is pressed
Sleep shift operation starts


Sleep shift operation starts
Approx. 8 hours after sleep shift operation starts, stops automatically
TEMP.
SETTING TEMPERATURE
0 - 1 hour
Approx. 2°C decrease
1 hour
Sleep Operation button is pressed
Approx. 3°C decrease
TIME

8.6. Random Auto Restart Control

- **If there is a power failure, operation will be automatically restarted after 3 to 5 1/2 minutes when the power is resumed.**
  It will start with previous operation mode and airflow direction. /
- **Restart time is decided randomly using 4 parameter:-**
  Intake air temperature, setting temperature, fan speed and Air Swing Blade position. /
- **Auto Restart Control is not available when Timer or Sleep Mode is set. /**
- **This control can be omitted by open the circuit of JX2. (Refer Circuit Diagram) /**

8.7. Indoor Fan Speed Control

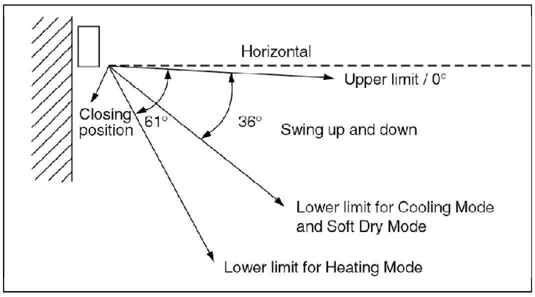
- **Auto Fan Speed Control**
  When set to Auto Fan Speed, the fan speed is adjusted between maximum and minimum setting as shown in the table. /
- **Manual Fan Speed Control**
  Basic fan speed adjustment (3 settings, from Lo to Hi) can be carried out by using the Fan Speed selection button at the remote control. /

Tap				SHi	Hi	Me	Lo+	Lo	Lo-	SLo	SSLo	Stop
Cooling	Normal	Airflow volume Manual	Hi		○							
			Me			○						
			Lo					○				
		Airflow volume Auto			○	○				○		○
		Sleep Shift							○			
	Powerful	Airflow volume Manual		○								
		Airflow volume Auto		○								
		Sleep Shift							○			
	Economy	Airflow volume Manual								○		
		Airflow volume Auto								○		
		Sleep Shift							○			
Soft Dry	Normal, Powerful, Economy	Airflow volume Manual								○		○
		Airflow volume Auto								○		○
		Sleep Shift							○			
Heating	Normal	Airflow volume Manual	Hi	○					○	○	○	○
			Me			○			○	○	○	○
			Lo				○		○	○	○	○
		Airflow volume Auto				○	○		○	○	○	○
		Sleep Shift							○	○	○	○
	Powerful	Airflow volume Manual		○		○	○		○	○	○	○
		Airflow volume Auto				○	○		○	○	○	○
		Sleep Shift							○	○	○	○
	Economy	Airflow volume Manual		○		○	○		○	○	○	○
		Airflow volume Auto				○	○		○	○	○	○
		Sleep Shift							○	○	○	○

8.8. Airflow Direction Control

Vertical Airflow Direction Auto-Control

- **When set a Airflow Direction Auto-Control with remote control, the louver swings up and down as shown in the diagram.**
- **The louver does not swing when the Indoor Fan Motor stops during operation at the upper limit.**
- **When stopped with remote control, the discharge vent is reset, and stopped at the closing position.**
- **During Anti-dew condensation prevention, Airflow Direction Auto-control angle change from 0° - 36° to 12° - 28° under Cooling and Soft Dry operation mode.**

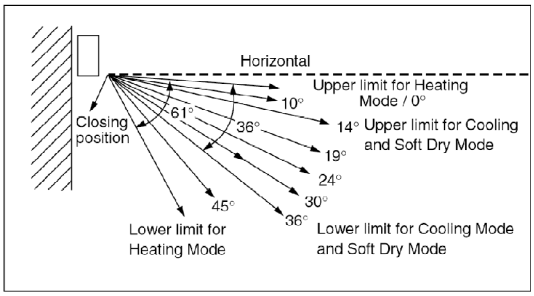

Horizontal
Upper limit / 0°
Closing position
61°
36°
Swing up and down
Lower limit for Cooling Mode and Soft Dry Mode
Lower limit for Heating Mode

※1. **There is no swinging while indoor fan motor is stopped during Cooling and Soft Dry operati**

※2. **When the intake air temperature reaches 38°C, the louver is changed from upper to lower li the intake air temperature falls to 35°C, the louver is changed from louver to upper limit.**

Vertical Airflow Direction manual Control

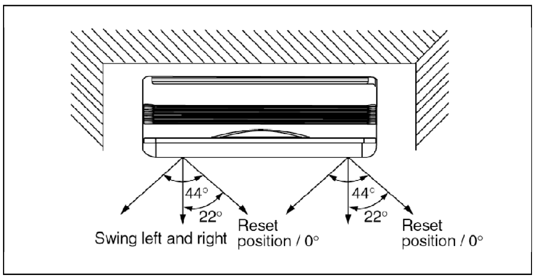
- **When the manual Airflow Direction Selection Button is pressed, the automatic airflow is released and the airflow direction louver move up and down in the range shown in the diagram.**
  The louver can be adjusted by pressing the button to the desired louver position.
- **When the remote control is used to stop the operation, the discharge vent is reset, and stopped at the closing position.**
- **During Anti-dew condensation prevention, Airflow Direction Manual control angle change from 14°, 19°, 24°, 30°, 36° to 16°, 18°, 20°, 22°, 24° under Cooling and Soft Dry operation mode.**


Horizontal
Upper limit for Heating Mode / 0°
10°
61°
36°
Closing position
14° Upper limit for Cooling and Soft Dry Mode
19°
24°
30°
45°
36°
Lower limit for Heating Mode
Lower limit for Cooling Mode and Soft Dry Mode

Horizontal Airflow Direction Auto-Control

- **When set a Airflow Direction Auto-Control with remote control, the vanes swings left and right as shown in the diagram.**
- **The vanes does not swing when the Indoor Fan Motor stops during operation at 22° angle.**
- **When stopped with remote control, the discharge vent is reset, and stopped at the reset position.**
- **During Anti-dew condensation prevention, Airflow Direction Auto-**

control angle change from 0° - 44° to 14° - 30° under Cooling and Soft Dry operation mode.

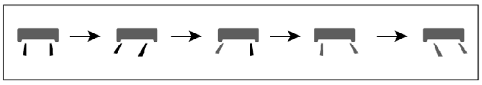

44°
22°
Swing left and right
Reset
position / 0°
44°
22°
Reset
position / 0°

※1. There is no swinging while indoor fan motor is stopped during Cooling and Soft Dry operatic

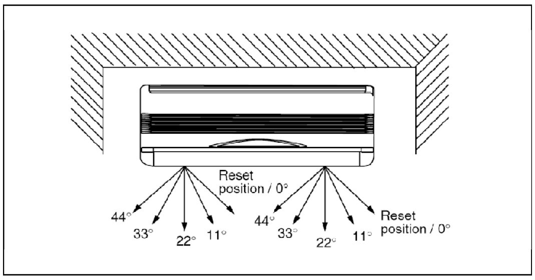
※2. In Heating operation, when the intake air temperature reaches set temperature, the airflow di Auto Swing left and right. When the intake air temperature falls to 2°C lower than set temper airflow direction is stop at 22° angle.

Horizontal Airflow Direction manual Control

- **When the manual Airflow Direction Selection Button is pressed, the automatic airflow is released and the airflow direction vane move left and right in the range shown in the diagram. The louver can be adjusted by pressing the button to the desired vane position.**



- **When the remote control is used to stop the operation, the vanes is reset, and stopped at reset position.**
- **During Anti-dew condensation prevention, Airflow Direction Manual control angle change from 0°, 11°, 22°, 33°, 44° to 14°, 18°, 22°, 26°, 30° under Cooling and Soft Dry operation mode.**


Reset
position / 0°
44°
33°
22°
11°
44°
33°
22°
11°
Reset
position / 0°

8.9. Delay ON Timer Control

- When the Delayed ON Timer is set by using the remote control, the unit will start operate slightly before the set time, so that the room will reach nearly to the set temperature by the desired time.
- For Cooling and Soft Dry mode, the operation will start 15 minutes before the set time.
- For Heating mode, the operation will start 30 minutes before the set time.
- For Automatic mode, the indoor fan will operate at SLo speed for 25 seconds, 30 minutes before the set time to detect the intake air temperature to determine the operation mode. The operation indication lamp will blink at this time.

8.10. Remote Control Signal Receiving Sound

- Long beep sound will be heard when:-
- Stopping the Air Conditioner using ON/OFF switch.
- Stopping the Sleep Mode.
- Stopping the Powerful Mode.
- Stopping the Economy Mode.
- Short beep sound will be heard for others.
- To switch off the beep sound:-
  Press the “Automatic Operation Button” continuously for 10 seconds or more (“beep” “beep” will be heard at the 10th second).
  Repeat the above if you want to switch ON the beep sound.

※ However, if the “Automatic Operation Button” has been pressed the Automatic operation will b
activated.
If you do not require this operation, you may change it by using the remote control.

8.11. Economy Mode Operation

Purpose of this operation is to save or reduced electrical power consumption of the room air conditioner.
However consumer is advised to use Economy Mode operation after the room temperature reaches the desired temperature.

1. Cooling and Soft Dry Mode

- When the Economy Mode is set, the set temperature will be automatically increased 0.5°C against the present setting temperature. This operation automatically will be running

under SLo Fan speed.

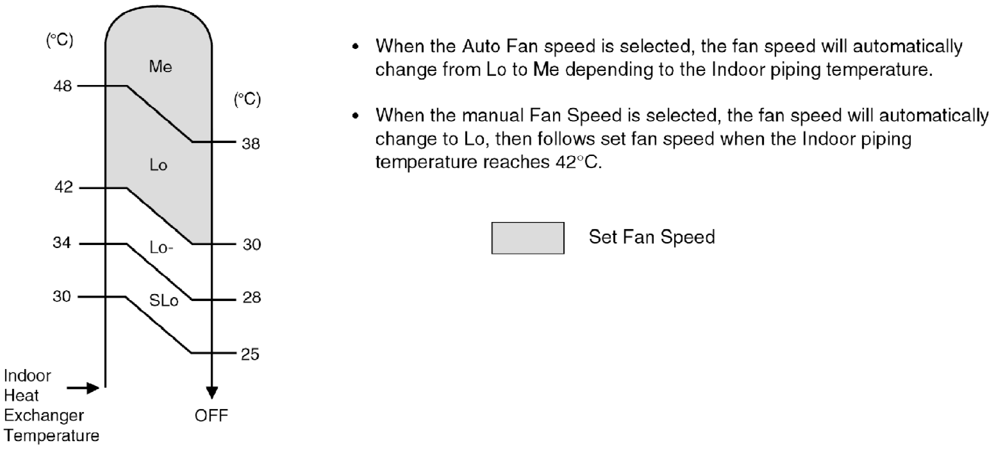
- Vertical Airflow Direction:-

In "Manual" or "Auto" setting, the vane will automatically change to Auto Air Swing.

2. Heating Mode

- When the Economy Mode is set, the temperature will be automatically decreased 0.5°C against the present setting temperature.

- The Fan Speed will shift as shown below:



- When the Auto Fan speed is selected, the fan speed will automatically change from Lo to Me depending to the Indoor piping temperature.
- When the manual Fan Speed is selected, the fan speed will automatically change to Lo, then follows set fan speed when the Indoor piping temperature reaches 42°C.

- Vertical Airflow Direction:-

In "Manual" or "Auto" setting, the vane will automatically change to Auto Air Swing. /

3. Economy Mode will stop if:

- Economy mode button is pressed again.
- Stopped by ON / OFF switch.
- Timer-off activates.
- Powerful mode button is pressed.
- Fan Speed control button is pressed.
- Sleep mode button is pressed ON.
- Operating mode is changed.
- Air Swing condition is changed.

8.12. Powerful Mode Operation

Purpose of this operation is to be obtain the setting temperature quickly.

1. Cooling and Soft Dry Mode

- When the Powerful Mode is set, the set temperature will be automatically decreased 3°C against the present setting temperature. This operation automatically will be running under SHi Fan Speed (Cooling), SLo Fan Speed (Soft Dry).

- Vertical Airflow Direction:-

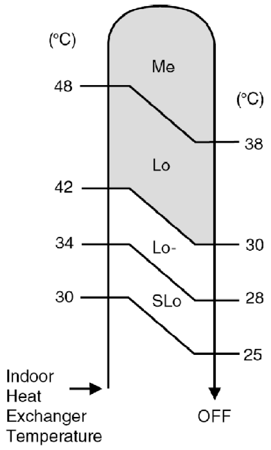
In “Manual” setting, the vane will automatically shift down 10°C lower than previous setting.

In “Auto” setting, the vane will automatically swing up and down. However the upper and down. However the upper and lower limit will be shifted 10° downward.

2. Heating Mode

- When the Powerful Mode is set, the set temperature will be automatically increased 3°C against the present setting temperature.

- The Fan Speed will shift as shown below:



- When the Auto Fan speed is selected, the fan speed will automatically change from Lo to Me depending to the Indoor piping temperature.
- When the manual Fan Speed is selected, the fan speed will automatically set to Lo, then follows set fan speed when the Indoor piping temperature reaches 42°C.

▨ Set Fan Speed

- Vertical Airflow Direction:-

In “Manual” setting, the vane will automatically shift down 5°C lower than previous setting.

In “Auto” setting, the vane will automatically shift between upper and lower limit depending on the intake air temperature as Heating Mode, Airflow Direction Auto-Control. However the upper and lower limit will be shifted 5°C downward.

3. Powerful mode will operate for 15 minutes only.

4. Powerful Mode will stop if:

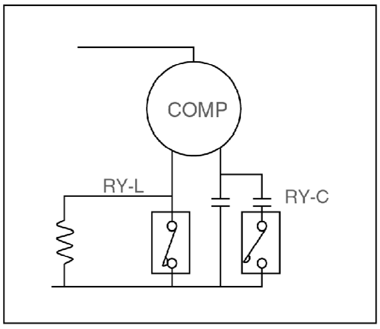
- **Powerful mode button is pressed again.**
- **Stopped by ON / OFF switch.**
- **Timer-off activates.**
- **Economy mode button is pressed.**
- **Sleep mode button is pressed.**
- **Operating mode is changed.**

8.13. Soft starter (Applicable only for Australia market)

A. Purpose

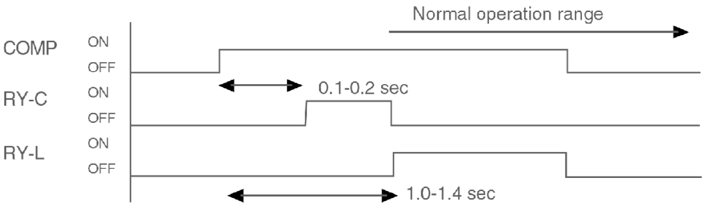
To reduce starting current lower than 45A.

B. Basic Operation



	RY-C	RY-L
Starting	ON	OFF
Running	OFF	ON

Note: RY-C = Relay starting capacitor
RY-L = Relay reactor



Note: RY-C = normally open
RY-L = normally open

1. **When indoor relay is turn ON, starting capacitor will be turn ON through RY-C for ~ 1 second. After that reactor will be turn OFF through RY-L and in the same time RY-C will turn OFF causes starting capacitor to be OFF.**
2. **When the unit operation ON by remote controller or thermostat OFF → ON the starter kit will be functioned.**

3. When the unit operation OFF → ON by the inner protector, the starter kit will be not function, mean the unit will be ON as a normal operation.

9. Operating Instructions

10. Installation Instructions

Required tools for Installation Works			
1. Philips screw driver	5. Spanner	9. Gas leak detector	13. Multimeter
2. Level gauge	6. Pipe cutter	10. Measuring tape	14. Torque wrench 18 N.m (1.8 kgf.m) 55 N.m (5.5 kgf.m) 65 N.m (6.5 kgf.m)
3. Electric drill, hole core drill (ø70 mm)	7. Reamer	11. Thermometer	15. Vacuum pump
4. Hexagonal wrench (4 mm)	8. Knife	12. Megameter	16. Gauge manifold

10.1. Safety Precautions

- **Read the following "SAFETY PRECAUTIONS" carefully before installation.**
- **Electrical work must be installed by a licensed electrician. Be sure to use the correct rating of the power plug and main circuit for the model to be installed.**
- **The caution items stated here must be followed because these important contents are related to safety. The meaning of each indication used is as below. Incorrect installation due to ignoring of the instruction will cause harm or damage, and the seriousness is classified by the following indications.**

⚠ **WARNING**	**This indication shows the possibility of causing death or serious injury.**

⚠ **CAUTION**	**This indication shows the possibility of causing injury or damage to prop**

The items to be followed are classified by the symbols:

⊘	**Symbol with background white denotes item that is PROHIBITED from do**

- Carry out test running to confirm that no abnormality occurs after the installation. Then, explain to user the operation, care and maintenance as stated in instructions. Please remind the customer to keep the operating instructions for future reference.

⚠ WARNING

1. **Engage dealer or specialist for installation. If installation done by the user is defective, it will c water leakage, electrical shock or fire.**
2. **Install according to this installation instruction strictly. If installation is defective, it will cause leakage, electrical shock or fire.**
3. **Use the attached accessories parts and specified parts for installation. Otherwise, it will cause to fall, water leakage, fire or electrical shock.**
4. **Install at a strong and firm location which is able to withstand the set's weight. If the strength i enough or installation is not properly done, the set will drop and cause injury.**
5. **For electrical work, follow the local national wiring standard, regulation and this installation instruction. An independent circuit and single outlet must be used. If electrical circuit capacity enough or defect found in electrical work, it will cause electrical shock or fire.**
6. **Use the specified cable (2.5 mm2) and connect tightly for indoor/outdoor connection. Connect and clamp the cable so that no external force will be acted on the terminal. If connection or fixi perfect, it will cause heat-up or fire at the connection.**
7. **Wire routing must be properly arranged so that control board cover is fixed properly. If control cover is not fixed perfectly, it will cause heat-up at connection point of terminal, fire or electric**
8. **When carrying out piping connection, take care not to let air substances other than the specifi refrigerant go into refrigeration cycle. Otherwise, it will cause lower capacity, abnormal high p in the refrigeration cycle, explosion and injury.**
9. **Do not damage or use unspecified power supply cord. Otherwise, it will cause fire or electrical shock.**
10. **Do not modify the length of the power supply cord or use of the extension cord, and do not share the single outlet with other electrical appliances. Otherwise, it will cause fire or electrical shock.**

CAUTION

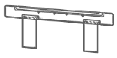
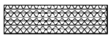
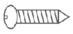
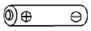
1. **The equipment must be earthed. It may cause electrical shock if grounding is not perfect.**
2. **Do not install the unit at place where leakage of flammable gas may occur. In case gas leaks and accumulates at surrounding of the unit, it may cause fire.**
3. **Carry out drainage piping as mentioned in installation instructions. If drainage is not perfect, v enter the room and damage the furniture.**

ATTENTION

1. **Selection of the installation location.**
   Select a installation location which is rigid and strong enough to support or hold the unit, and location for easy maintenance.
2. **Power supply connection to the room air conditioner.**
   Connect the power supply cord of the room air conditioner to the mains using one of the follo method.
   Power supply point shall be the place where there is ease for access for the power disconnect case of emergency.
   In some countries, permanent connection of this room air conditioner to the power supply is p

   1. Power supply connection to the receptacle using a power plug. / Use an approved 16A power plug with earth pin for 2.0HP (C18BK V18BK, W18BK) and 20A for 2.5HP (C24BK, A24BK, XC24BK, V24BK, W24BK) for the connection to the receptacle.
   2. Power supply connection to a circuit breaker for the permanent connection. Use an approved 16A circuit breaker 2.0HP (C18BK, A1 W18BK) and 20A for 2.5HP (C24BK, A24BK, XC24BK, V24BK, W24BK) for the permanent connection. It must be a double pole switch minimum 3 mm contact gap.
3. **Do not release refrigerant.**
   Do not release refrigerant during piping work for installation, reinstallation and during repairin refrigeration parts. Take care of the liquid refrigerant, it may cause frostbite.
4. **Installation work.**
   It may need two people to carry out the installation work.
5. **Do not install this appliance in a laundry room or other location where water may drip from the etc.**

Attached accessories

No.	Accesories part	Qty.	No.	Accesories part	Qty.
1	Installation plate 	1	6	Solar refreshing deodorizing filter 	1
2	Installation plate fixing screw	6	7	Remote Control holder	1
3	Remote control	1	8	Remote Control holder fixing screw 	2
4	Battery 	2	9	Drain elbow (A18BK, A24BK, W18BK, W24BK)	1
5	Air purifying filter	1			

Applicable piping kit
CZ-4F5, 7, 10AN (C18BK, A18BK, V18BK, W18BK)
CZ-52F5, 7, 10AN (C24BK, A24BK, XC24BK, V24BK, W24BK)

SELECT THE BEST LOCATION

INDOOR UNIT

- **There should not be any heat source or steam near the unit.**
- **There should not be any obstacles blocking the air circulation.**
- **A place where air circulation in the room is good.**
- **A place where drainage can be easily done.**
- **A place where noise prevention is taken into consideration.**
- **Do not install the unit near the door way.**
- **Ensure the spaces indicated by arrows from the wall, ceiling, fence or other obstacles.**
- **Recommended installation height for indoor unit shall be at least 2.3 m.**

OUTDOOR UNIT

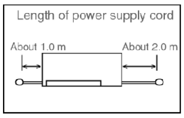
- **If an awning is built over the unit to prevent direct sunlight or rain, be careful that heat radiation from the condenser is not obstructed.**
- **There should not be any animal or plant which could be affected by hot air discharged.**
- **Keep the spaces indicated by arrows from wall, ceiling, fence or other obstacles.**

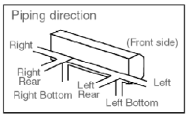
- Do not place any obstacles which may cause a short circuit of the discharged air.

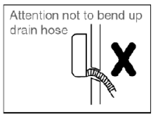
- If piping length is over 7.5m, additional refrigerant should be added as shown in the table.

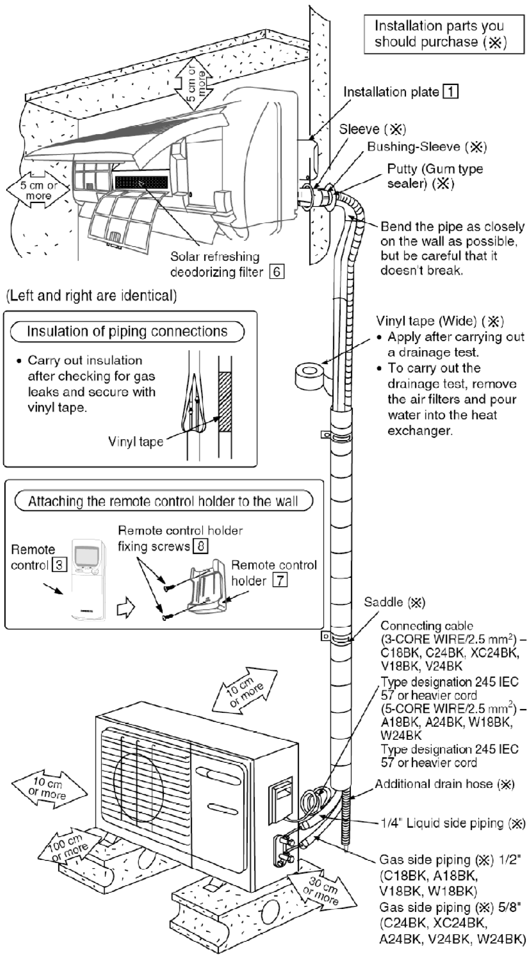
Model	Piping size		Rated Length (m)	Max. Elevation (m)	Max. Piping Length (m)	Additional Refrigerant (g/m)
	Gas	Liquid				
C18BK, V18BK	1/2”	1/4”	5	20	25	20
C24BK, V24BK, XC24BK	5/8”	1/4”	5	20	25	30
A18BK, W18BK	1/2”	1/4”	5	20	25	20
A24BK, W24BK	5/8”	1/4”	5	20	25	30

Indoor/Outdoor Unit Installation Diagram


Length of power supply cord
About 1.0 m
About 2.0 m


Piping direction
Right
(Front side)
Right Rear
Left Rear
Left
Right Bottom
Left Bottom


Attention not to bend up drain hose


Installation parts you should purchase (※)
Installation plate 1
Sleeve (※)
Bushing-Sleeve (※)
Putty (Gum type sealer) (※)
Bend the pipe as closely on the wall as possible, but be careful that it doesn't break.
5 cm or more
5 cm or more
Solar refreshing deodorizing filter 6
(Left and right are identical)
Insulation of piping connections
• Carry out insulation after checking for gas leaks and secure with vinyl tape.
Vinyl tape
Vinyl tape (Wide) (※)
• Apply after carrying out a drainage test.
• To carry out the drainage test, remove the air filters and pour water into the heat exchanger.
Attaching the remote control holder to the wall
Remote control 3
Remote control holder fixing screws 8
Remote control holder 7
Saddle (※)
Connecting cable (3-CORE WIRE/2.5 mm²) – C18BK, C24BK, XC24BK, V18BK, V24BK
Type designation 245 IEC 57 or heavier cord
(5-CORE WIRE/2.5 mm²) – A18BK, A24BK, W18BK, W24BK
Type designation 245 IEC 57 or heavier cord
Additional drain hose (※)
1/4" Liquid side piping (※)
Gas side piping (※) 1/2" (C18BK, A18BK, V18BK, W18BK)
Gas side piping (※) 5/8" (C24BK, XC24BK, A24BK, V24BK, W24BK)
10 cm or more
10 cm or more
100 cm or more
30 cm or more

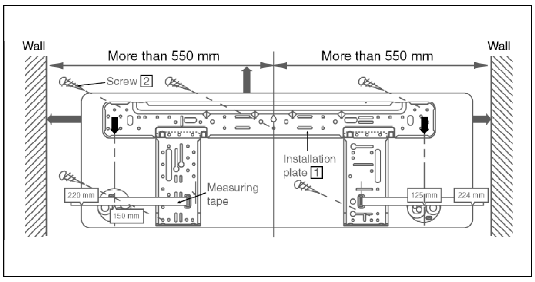
- This illustration is for explanation purposes only. / The indoor unit will actually face a different way.

10.2. INDOOR UNIT

10.2.1. SELECT THE BEST LOCATION / (Refer to "Select the best location" section)

10.2.2. HOW TO FIX INSTALLATION PLATE

The mounting wall is strong and solid enough to prevent it from the vibration.


Wall
Wall
More than 550 mm
More than 550 mm
Screw 2
Installation plate 1
Measuring tape
220 mm
150 mm
125 mm
224 mm

The centre of installation plate should be at more than 550 mm at right and left of the wall.
The distance from installation plate edge to ceiling should more than 67 mm.
From installation plate left edge to unit's left side is 47 mm.
From installation plate right edge to unit's right is 73 mm.

Ⓑ : **For left side piping, piping connection for liquid should be about 126 mm from this line.**

: **For left side piping, piping connection for gas should be about 174 mm from this line.**

: **For left side piping, piping connecting cable should be about 984 mm from this line.**

1. Mount the installation plate on the wall with 5 screws or more. / (If mounting the unit on the concrete wall consider using anchor bolts.)

- **Always mount the installation plate horizontally by aligning the marking-off line with the thread and using a level gauge.**

2. Drill the piping plate hole with ø70 mm hole-core drill.

- **Line according to the arrows marked on the lower left and right side of the installation plate. The meeting point of the extended line is the centre of the hole. Another method is by putting measuring tape at position as shown in the diagram above. The hole centre is obtained by measuring the distance namely 150 mm and 125 mm for left and right hole respectively.**
- **Drill the piping hole at either the right or the left and the hole should be slightly slanted to the outdoor side.**

10.2.3. TO DRILL A HOLE IN THE WALL AND INSTALL A SLEEVE OF PIPING

1. Insert the piping sleeve to the hole.

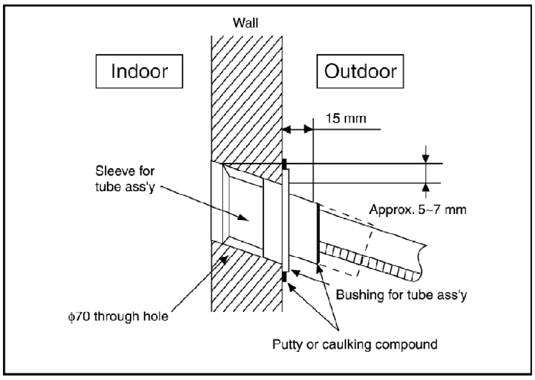
2. Fix the bushing to the sleeve.

3. Cut the sleeve until it extrudes about 15 mm from the wall.

Caution

When the wall is hollow, please be sure to use the sleeve for tube ass'y to prevent dangers caused by mice biting the connecting cable.

4. Finish by sealing the sleeve with putty or caulking compound at the final stage.


Wall
Indoor
Outdoor
15 mm
Sleeve for tube ass'y
Approx. 5~7 mm
Bushing for tube ass'y
ϕ70 through hole
Putty or caulking compound

10.2.4. INDOOR UNIT INSTALLATION

1. For the right rear piping

Pull out the Indoor piping
↓
Install the Indoor Unit
↓
Secure the Indoor Unit
↓
Insert the connecting cable

2. For the right and right bottom piping

Pull out the Indoor piping
↓
Install the Indoor Unit
↓
Insert the connecting cable
↓
Secure the Indoor Unit

3. For the embedded piping

Replace the drain hose

⬇

Bend the embedded piping

⬇
- Use a spring bender or equivalent to bend the piping so that the piping is not crushed.

Install the Indoor Unit

⬇

Cut and flare the embedded piping

⬇
- When determing the dimension of the piping, slide the unit all the way to the left on the installation plate.
  Refer to the section "Cutting and flaring the piping".

Pull the connecting cable into Indoor Unit

⬇
- The inside and outside connecting cable can be connected without removing the front grille.

Connect the piping

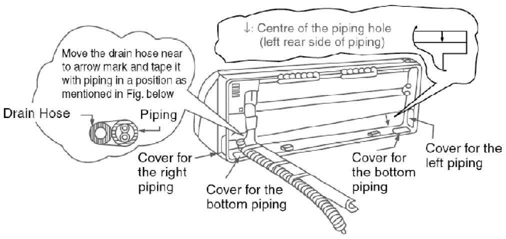
⬇
- Please refer to "Connecting the piping" column in outdoor unit section. (Below steps are done after connecting the outdoor piping and gas-leakage confirmation.)

Insulate and finish the piping

⬇
- Please refer to "Piping and finishing" column of outdoor section and "Insulation of piping connections" column as mentioned in Indoor/ Outdoor Unit Installation.

Secure the Indoor Unit

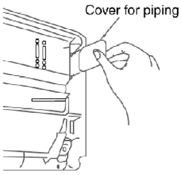
Pull out the piping and drain hose


↓: Centre of the piping hole
(left rear side of piping)
Move the drain hose near to arrow mark and tape it with piping in a position as mentioned in Fig. below
Drain Hose
Piping
Cover for the right piping
Cover for the bottom piping
Cover for the bottom piping
Cover for the left piping

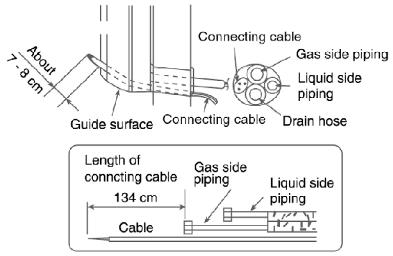
How to keep the cover

In case of the cover is cut, keep the cover at the rear of chassis as shown in the illustration for future reinstallation.

(Left, right and 2 bottom covers for piping)

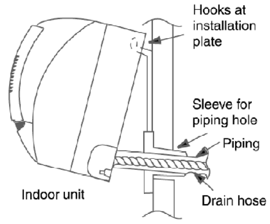

Cover for piping

Insert the connecting cable


About 7 - 8 cm
Connecting cable
Gas side piping
Liquid side piping
Guide surface
Connecting cable
Drain hose
Length of conncting cable
134 cm
Cable
Gas side piping
Liquid side piping

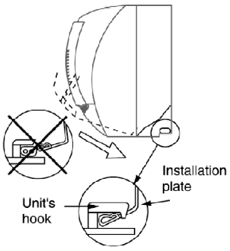
Install the Indoor Unit

Hook the indoor unit onto the upper portion of installation plate (Engage the indoor unit with the upper edge of the installation plate). Ensure the hooks are properly seated on the installation plate by moving in left and right.

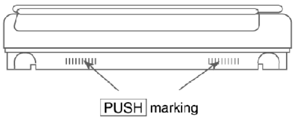

Hooks at installation plate
Sleeve for piping hole
Piping
Indoor unit
Drain hose

Secure the Indoor Unit

1. Tape the extra power supply cord in a bundle and keep it behind the chassis.
   - Ensure that the power supply cord is not clamped in between the unit's hook (2 positions) and installation plate.
2. Press the lower left and right side of the unit against the installation plate until hooks engages with their slots (sound click).


Installation plate
Unit's hook

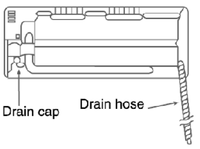
To take out the unit, push the PUSH marking at the bottom unit, and pull it slightly towards you to disengage the hooks from the unit.

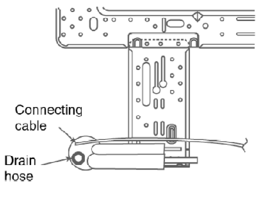

PUSH marking

(This can be used for left rear piping & left bottom piping also.)

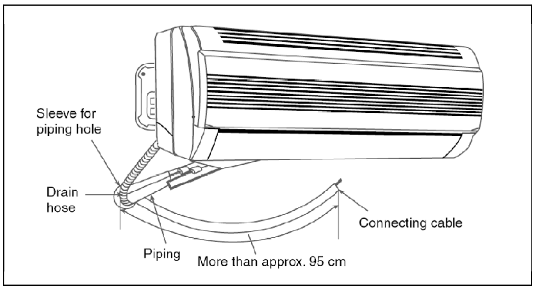
Exchange the drain hose and the cap

Refer view for left piping installation

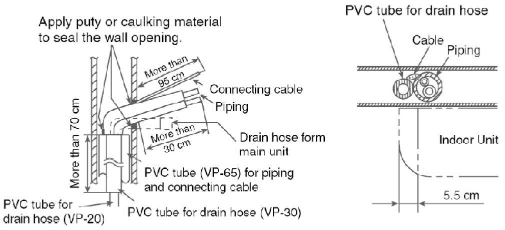

Drain cap
Drain hose


Connecting cable
Drain hose

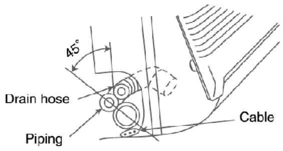
Adjust the piping slightly downwards


Sleeve for piping hole
Drain hose
Piping
More than approx. 95 cm
Connecting cable

- How to pull the piping and drain hose out, in case of the embedded piping.


Apply puty or caulking material to seal the wall opening.
More than 95 cm
Connecting cable
Piping
More than 70 cm
More than 30 cm
Drain hose form main unit
PVC tube (VP-65) for piping and connecting cable
PVC tube for drain hose (VP-20)
PVC tube for drain hose (VP-30)
PVC tube for drain hose
Cable
Piping
Indoor Unit
5.5 cm

- In case of left piping how to insert the connecting cable and drain hose.


45°
Drain hose
Piping
Cable

(For the right piping, follow the same procedure)

10.2.5. CONNECT THE CABLE TO THE INDOOR UNIT

1. **The inside and outside connecting cable can be connected without removing the front grille.**
2. **Connecting cable between indoor unit and outdoor unit shall be approved polychloroprene sheathed 3 (C18BK, C24BK, XC24BK, V18BK, V24BK) or 5 (A18BK, A24BK, W18BK, W24BK) × 2.5 mm^2 flexible cord, type designation 245 IEC 57 or heavier cord.**

   - **Ensure the color of wires of outdoor unit and the terminal Nos. are the same to the indoor's respectively.**
   - **Earth lead wire shall be longer than the other lead wires as shown in the figure for the electrical safety in case of the slipping out of the cord from the anchorage. /**

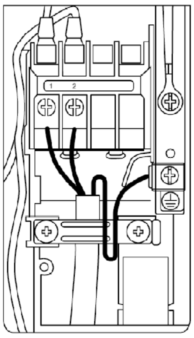
CS/CU-C18BK, C24BK, XC24BK, V18BK, V24BK

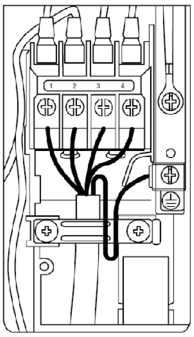
Terminals on the indoor unit	1	2	⏚
Color of wires	▨	▨	▨
Terminals on the outdoor unit	1	2	⏚

CS/CU-A18BK, A24BK, W18BK, W24BK

Terminals on the indoor unit	1	2	3	4	⏚
Color of wires	░	▒	▓	▓	█
Terminals on the outdoor unit	1	2	3	4	⏚

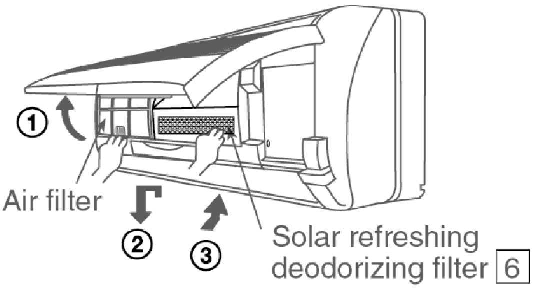
- **Secure the cable onto the control board with the holder (clamper).**


C18BK, C24BK, XC24BK,
V18BK, V24BK


A18BK, A24BK,
W18BK, W24BK

INSTALLATION OF AIR PURIFYING FILTERS

1. **Open the front panel.**
2. **Remove the air filters.**
3. **Put air purifying filters (left) and solar refreshing deodorizing filter (right) into place as shown in illustration below.**



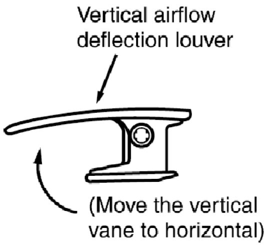
HOW TO TAKE OUT FRONT GRILLE

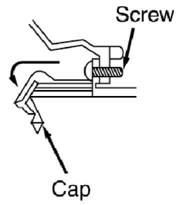
Please follow the steps below to take out front grille if necessary such as when servicing.

1. **Set the vertical airflow direction louver to the horizontal position.**
2. **Slide down the three caps on the front grille as shown in the illustration below, and then remove the three mounting screws.**

3. Pull the lower section of the front grille towards you to remove the front grille.

When reinstalling the front grille, first set the vertical airflow direction louver to the horizontal position and then carry out above steps 2 - 3 in the reverse order.


Vertical airflow deflection louver
(Move the vertical vane to horizontal)



AUTO SWITCH OPERATION

The below operations will be performed by pressing the “AUTO” switch.

1. AUTO OPERATION MODE

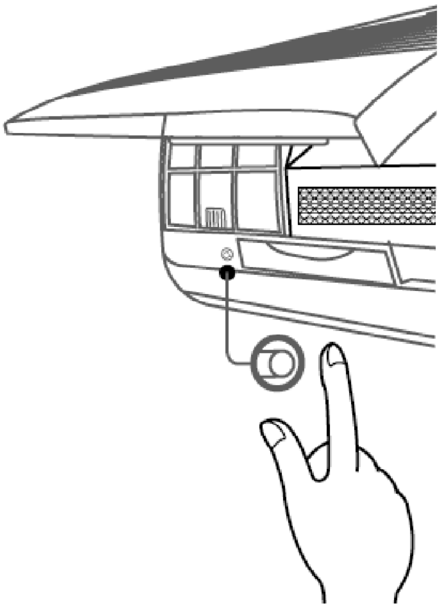
The Auto operation will be activated immediately once the Auto Switch is pressed.

2. TEST RUN OPERATION (FOR PUMP DOWN/SERVICING PURPOSE)

The Test Run operation will be activated if the Auto Switch is pressed continuously for more than 5 sec. to below 10 sec.. A “pep” sound will occur at the fifth sec., in order to identify the starting of Test Run operation

3. REMOTE CONTROLLER RECEIVING SOUND ON/OFF

The ON/OFF of Remote Controller receiving sound can be change over by pressing the “AUTO” Switch continuously for 10 sec. and above. A “pep”, “pep” sound will occur at the tenth sec., in order to indicate the “ON/OFF” change over of remote control receiving sound.



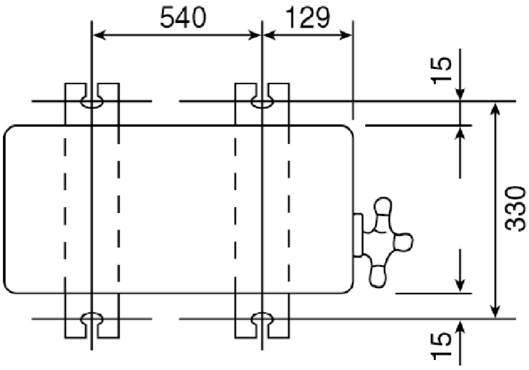
10.3. OUTDOOR UNIT

10.3.1. SELECT THE BEST LOCATION / (Refer to “Select the best location” section)

10.3.2. INSTALL THE OUTDOOR UNIT

- After selecting the best location, start installation according to Indoor/Outdoor Unit Installation Diagram.

1. **Fix the unit on concrete or rigid frame firmly and horizontally by bolt nut. (ø10 mm).**
2. **When installing at roof, please consider strong wind and earthquake. Please fasten the installation stand firmly with bolt or nails.**



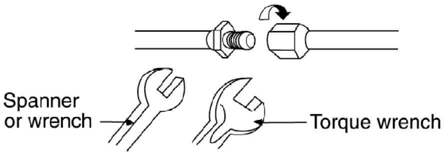
10.3.3. CONNECTING THE PIPING

Connecting The Piping To Indoor Unit

Please make flare after inserting flare nut (locate at joint portion of tube assembly) onto the copper pipe. (In case of using long piping)

Connect the piping

- **Align the center of piping and sufficiently tighten the flare nut with fingers.**
- **Further tighten the flare nut with torque wrench in specified torque as stated in the table.**


Spanner
or wrench
Torque wrench

MODEL	Piping size (Torque)	
	Gas	Liquid
C18BK, A18BK V18BK, W18BK	1/2” (55 N.m)	1/4” (18 N.m)
C24BK, A24BK, XC24BK, V24BK, W24BK	5/8” (65 N.m)	1/4” (18 N.m)

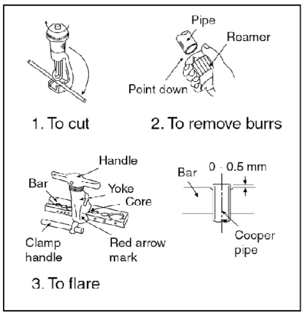
Connecting The Piping To Outdoor Unit

Decide piping length and then cut by using pipe cutter. Remove burrs from cut edge. Make flare after inserting the flare nut (located at valve) onto the copper pipe.

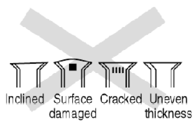
Align center of piping to valves and then tighten with torque wrench to the specified torque as stated in the table.

CUTTING AND FLARING THE PIPING

1. **Please cut using pipe cutter and then remove the burrs.**
2. **Remove the burrs by using reamer. If burrs is not removed, gas leakage may be caused.**
   Turn the piping end down to avoid the metal powder entering the pipe.
3. **Please make flare after inserting the flare nut onto the copper pipes.**


Pipe
Reamer
Point down
1. To cut
2. To remove burrs
Handle
Bar
Yoke
Core
Clamp handle
Red arrow mark
Bar
0 - 0.5 mm
Cooper pipe
3. To flare

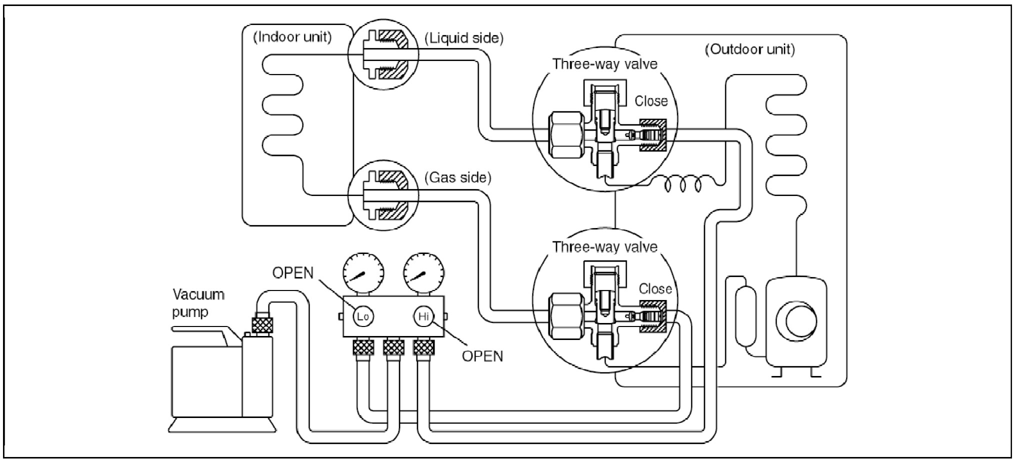
■ Improper flaring ■


Inclined
Surface damaged
Cracked
Uneven thickness

When properly flared, the internal surface of the flare will evenly shine and be of even thickness. Since the flare part comes into contact with the connections, carefully check the flare finish.

10.3.4. (a) EVACUATION OF THE EQUIPMENT (FOR EUROPE & OCEANIA DESTINATION)

WHEN INSTALLING AN AIR CONDITIONER, BE SURE TO EVACUATE THE AIR INSIDE THE INDOOR UNIT AND PIPES in the following procedure.



1. **Connect a charging hose with a push pin to the Low and High side of a charging set and the service port of the 3-way valve.**

   - Be sure to connect the end of the charging hose with the push pin to the service port.

2. **Connect the center hose of the charging set to a vacuum pump.**
3. **Turn on the power switch of the vacuum pump and make sure that the needle in the gauge moves from 0 cmHg (0 MPa) to / -76 cmHg (-0.1 MPa). Then evacuate the air approximately ten minutes.**
4. **Close the valve of both the Low and High sides of the charging set and turn off the vacuum pump. Make sure that the needle in the gauge does not move after approximately five minutes.**
   Note: BE SURE TO FOLLOW THIS PROCEDURE IN ORDER TO AVOID REFRIGERANT GAS LEAKAGE.
5. **Disconnect the charging hose from the vacuum pump and from the service port of the 3-way valve.**
6. **Tighten the service port caps of the 3-way valve at a torque of 18 N.m with a torque wrench.**
7. **Remove the valve caps of both of the 2-way valve and 3-way valve. Position both of the valves to “OPEN” using a hexagonal wrench (4 mm).**

8. Mount valve caps onto the 2-way valve and the 3-way valve.

- Be sure to check for gas leakage.

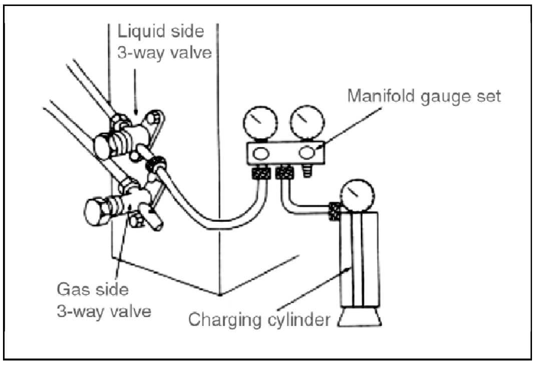
CAUTION

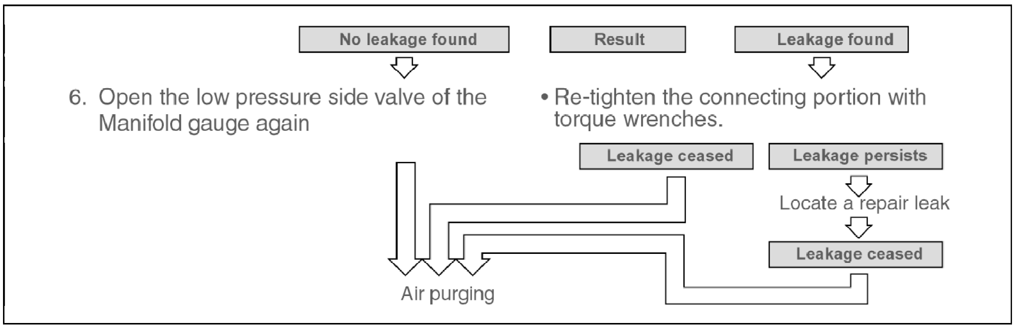
- **If gauge needle does not move from 0 cmHg (0 MPa) to -76 cmHg (-0.1 MPa), in step 3 above ta following measure:**
- **If the leak stops when the piping connections are tightened further, continue working from ste**
- **If the leak does not stop when the connections are retightened, repair the location of leak.**
- **Do not release refrigerant during piping work for installation and reinstallation. Take care of th liquid refrigerant, it may cause frostbite.**

10.3.5. (b) AIR PURGING OF THE PIPING AND INDOOR UNIT

1) Checking a gas leakage.

1. **Remove the service-port cap from the 3-way valves.**
2. **Connect the Manifold gauge set to the service port of Liquid side 3 -way valve.**
3. **Connect the Charging Cylinder to the Manifold gauge set and open the valve of the Cylinder.**
4. **Open the low pressure side valve of the Manifold gauge for approx. 10 seconds and then close.**
5. **Check gas-leakage of the connecting portion of pipings with the gas-leak detector.**




No leakage found
Result
Leakage found
6. Open the low pressure side valve of the Manifold gauge again
• Re-tighten the connecting portion with torque wrenches.
Leakage ceased
Leakage persists
Locate a repair leak
Leakage ceased
Air purging

<For the left pipings>.

1) **Measure the pressure.**
2) **Keep it for 5-10 minutes**

-Ensure if the pressure indicated on the gauge is as same as that of measured at first time

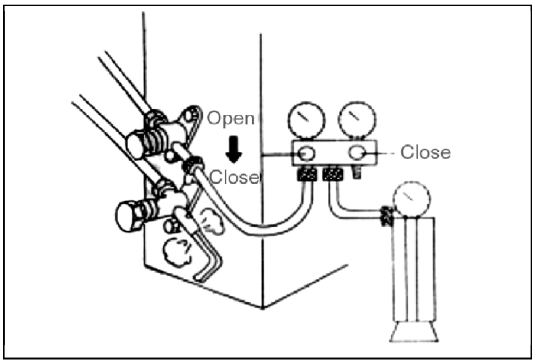
2) Air purging

The air remaining in the Refrigeration cycle which contains moisture may cause malfunction on the Compressor.

1. **To purge the air, push the pin on the Gas side 3-way valve for three seconds with a Hexagonal wrench and set it free for one minute.**

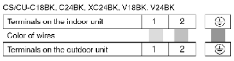
   - Repeat this for three times.

2. **To balance the refrigerant, close the low pressure side valve on the Manifold gauge and release refrigerant from the piping through service port until the gauge indicates 0.5 - 0.3 MPa.**
3. **Set both 3-way valves to open position with the Hexagonal wrench for the unit operation.**


Open
Close
Close

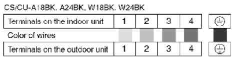
10.3.6. CONNECT THE CABLE TO THE OUTDOOR UNIT

1. **Remove the control board cover from the unit by loosening the screw.**
2. **Connecting cable between indoor unit and outdoor unit shall be approved polychloroprene sheathed 3 (C18BK, C24BK, XC24BK, V18BK, V24BK) or 5 (A18BK, A24BK, W18BK, W24BK) × 2.5 mm^2 flexible cord, type designation 245 IEC 57 or heavier cord.**



CS/CU-C18BK, C24BK, XC24BK, V18BK, V24BK

Terminals on the indoor unit	1	2	⏚
Color of wires	▨	▨	▨
Terminals on the outdoor unit	1	2	⏚



CS/CU-A18BK, A24BK, W18BK, W24BK

Terminals on the indoor unit	1	2	3	4	⏚
Color of wires	▨	▨	▨	▨	▨
Terminals on the outdoor unit	1	2	3	4	⏚

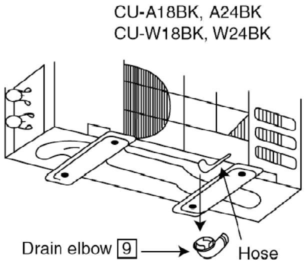
3. **Secure the cable onto the control board with the holder (clamper).**
4. **Attach the control board cover back to the original position with the screw.**

10.3.7. PIPE INSULATION

1. **Please carry out insulation at pipe connection portion as mentioned in Indoor/Outdoor Unit Installation Diagram. Please wrap the insulated piping end to prevent water from going inside the piping.**
2. **If drain hose or connecting piping is in the room (where dew may form), please increase the insulation by using POLY-E FOAM with thickness 6 mm or above.**

DISPOSAL OF OUTDOOR UNIT DRAIN WATER

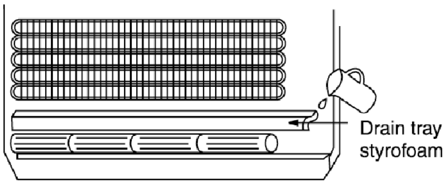
- **If a drain elbow is used, the unit should be placed on a stand which is taller than 3 cm.**
- **If the unit is used in an area where temperature falls below 0°C for 2 or 3 days in succession, it is recommended not to use a drain elbow, for the drain water freezes and the fan will not rotate.**


CU-A18BK, A24BK
CU-W18BK, W24BK
Drain elbow 9
Hose

Install the hose at an angle so that the water smoothly flows out.

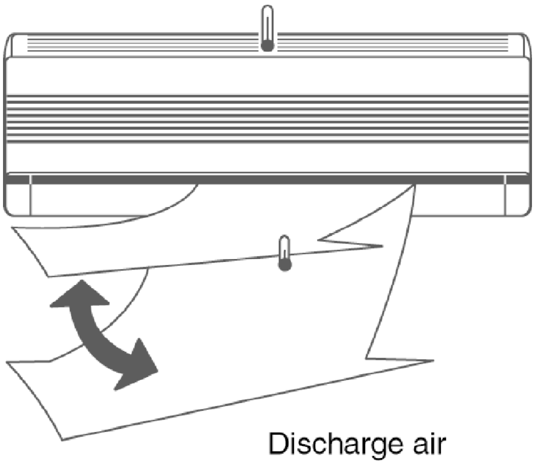
CHECK THE DRAINAGE

- **Open front panel and remove air filters. / (Drainage checking can be carried out without removing the front grille.)**
- **Pour a glass of water into the drain tray-styrofoam.**
- **Ensure that water flows out from drain hose of the indoor unit.**


Drain tray
styrofoam

EVALUATION OF THE PERFORMANCE

- **Operate the unit at cooling operation mode for fifteen minutes or more.**
- **Measure the temperature of the intake and discharge air.**
- **Ensure the difference between the intake temperature and the discharge is more than 8°C.**



NOTE:

These equipment shall be connected to a suitable mains network with a main impedance less than the following:

CS / CU-C18BKP5: 0.20 Ω
CS / CU-A18BKP5: 0.20 Ω
CS / CU-C24BKP5: 0.12 Ω
CS / CU-A24BKP5: 0.14 Ω

CHECK ITEMS

☐ Is there any gas leakage at flare nut connections?

☐ Has the heat insulation been carried out at flare nut connection?

☐ Is the connecting cable being fixed to terminal board firmly?

☐ Is the connecting cable being clamped firmly?

☐ Is the drainage OK?
(Refer to “Check the drainage” section)

☐ Is the earth wire connection properly done?

☐ Is the indoor unit properly hooked to the installation plate?

☐ Is the power supply voltage complied with rated value?

☐ Is there any abnormal sound?

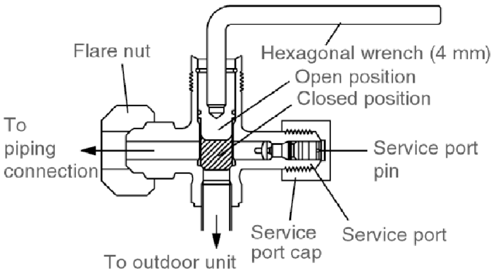
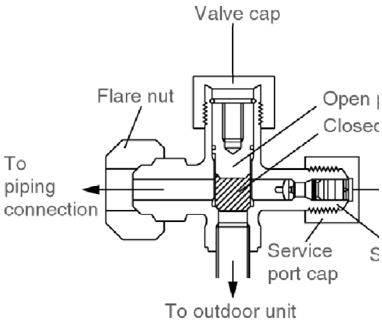
☐ Is the cooling operation normal?

☐ Is the thermostat operation normal?

☐ Is the remote control’s LCD operation normal?

☐ Is the air purifying filter installed?

11. 3-way Valve

	3-way Valve (Liquid Side)		3-way Valve (Gas Side	
	 Flare nut Hexagonal wrench (4 mm) Open position Closed position To piping connection Service port pin Service port cap Service port To outdoor unit		 Valve cap Flare nut Open Close To piping connection Service port cap S To outdoor unit	
Works	**Shaft Position**	**Service Port**	**Shaft Position**	**Servic**
Shipping	**Closed (With valve cap)**	**Closed (With cap)**	**Closed (With valve cap)**	**Cl (With**
(Installation and Re-installation)	**Closed (Clockwise)**	**Open (Connected manifold gauge w/charging cylinder)**	**Closed (Clockwise)**	**Op (Pus**
Operation	**Open (With valve cap)**	**Closed (With cap)**	**Open (With valve cap)**	**Clo (With**
Pumping down (Transferring)	**Closed (Clockwise)**	**Closed (With cap)**	**Open (Counter-Clockwise)**	**Op (Conn manifol**
Evacuation (Servicing)	**Open (Counter-clockwise)**	**Open (Connected manifold gauge)**	**Open (Counter-clockwise)**	**Op (Conn manifol**
Gas charging (Servicing)	**Open (Counter-clockwise)**	**Open (Connected manifold gauge)**	**Open (Counter-clockwise)**	**Op (Conn manifol**
Pressure check	**Open**	**Closed**	**Open**	**Op**

	3-way Valve (Liquid Side)		3-way Valve (Gas Side	
(Servicing)	(Counter-clockwise)	(With cap)	(Counter-clockwise)	(Conn manifol
Gas releasing (Servicing)	Open (Counter-clockwise)	Open (Connected manifold gauge)	Open (Counter-clockwise)	Op (Conn manifol

11.1. Evacuation of the Equipment (For Europe & Oceania Destination)

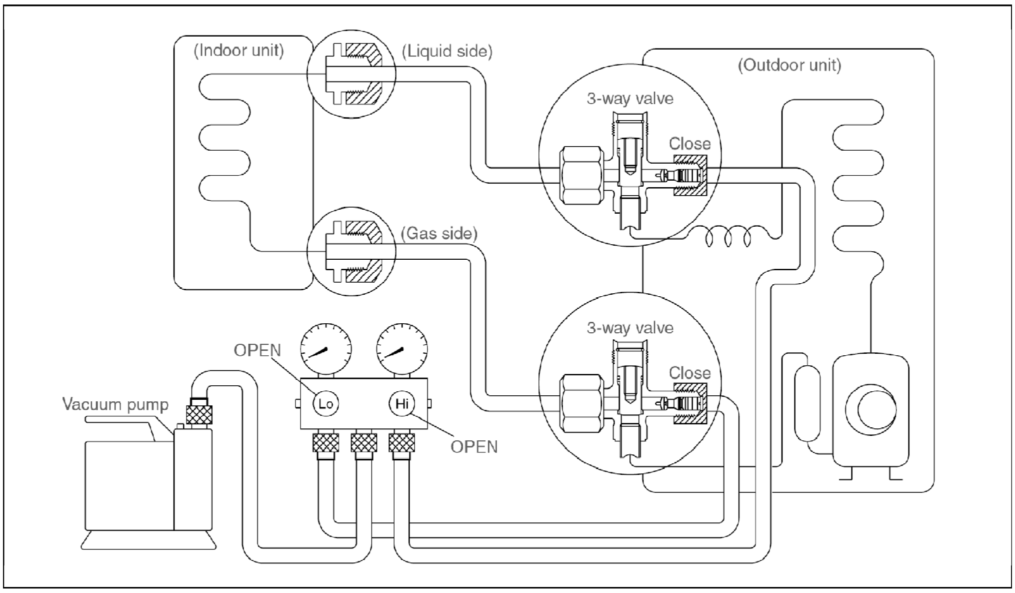
11.1.1. Evacuation of the Installation

When installing an air conditioner, be sure to evacuate the air inside the indoor unit and pipes in the following procedure.

Required tools:

Hexagonal wrench, adjustable wrench, torque wrenches, wrench to hold the joints, gas leak detector, and charging set.

The air in the indoor unit and in the piping must be purged. If air remains in the refrigeration pipings, it will affect the compressor, reduce the cooling capacity, and could lead to a malfunction.



Service port cap

Be sure, using a torque wrench to tighten the service port nut (after using the service port), so th prevents the gas leakage from the refrigeration cycle.

Procedure:

1. **Connect a charging hose with a push pin to the Low and High sides of a charging set and the service ports of a 3-way valves.**

   - Be sure to connect the end of the charging hose with the push pin to the service port.

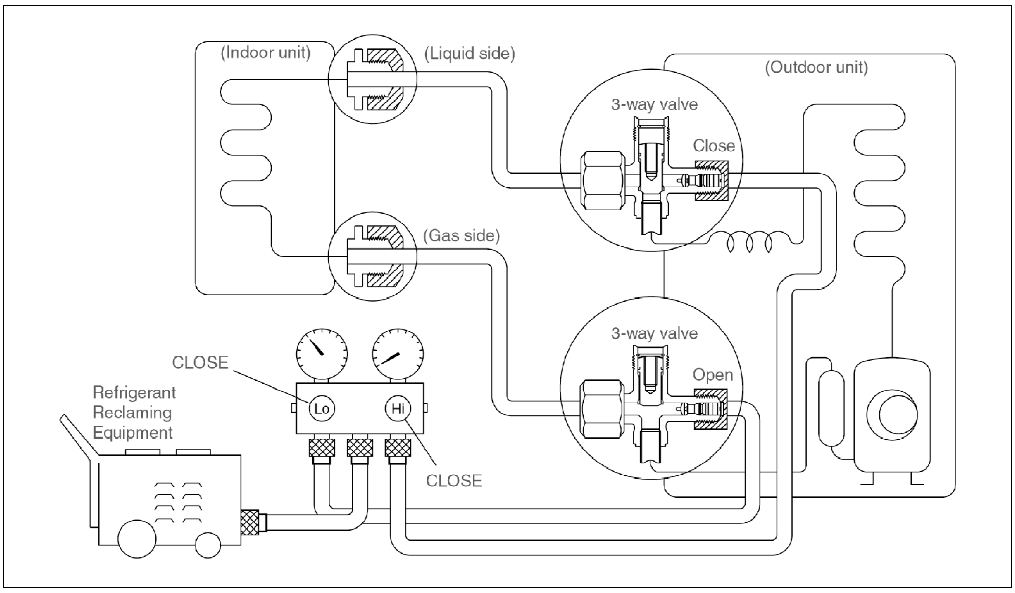
2. **Connect the centre hose of the charging set to a vacuum pump.**
3. **Turn on the power switch of the vacuum pump and make sure that the needle in the gauge moves from 0 cmHg (0 MPa) to -76 cmHg (-0.1 MPa). Then evacuate the air for approximately 10 minutes.**
4. **Close the valve of both the Low adn High sides of the charging set and turn off the vacuum pump. Make sure that the needle in the gauge does not move after approximately 5 minutes.**
   BE SURE TO TAKE THIS PROCEDURE IN ORDER TO AVOID REFRIGERANT GAS LEAKAGE.
5. **Disconnect the charging hose from the vacuum pump and from the service ports of the 3-way valves.**
6. **Tighten the service port caps of both the 3-way valves at a torque of 18 N.m with a torque wrench.**
7. **Remove the valve caps of both the 3-way valves. Position both of the valves to "open" using a hexagonal wrench (4 mm).**
8. **Mount the valve caps onto both of the 3-way valves.**

   - Be sure to check for gas leakage.

Caution

If gauge needle does not move from 0 cmHg (0 MPa) to -76 cmHg (-0.1 MPa) in step (3) above, take the following measures:
If the leaks stop when the piping connections are tightened further, continue working from step (3).
If the leaks do not stop when the connections are retightened, repair the location of the leak.

11.1.2. Pumping down


(Indoor unit)
(Liquid side)
(Outdoor unit)
3-way valve
Close
(Gas side)
3-way valve
Open
CLOSE
Refrigerant
Reclaming
Equipment
Lo
Hi
CLOSE

Procedure:

1. Confirm that both the 3-way valves are set to the open position.
    - Remove the valve stem caps and confirm that the valve stems are in the open position.
    - Be sure to use a hexagonal wrench to operate the valve stems.
2. Operate the unit for 10 to 15 minutes.
3. Stop operation and wait for 3 minutes, then connect the charge set to the service port of the 3-way valve.
    - Connect the charge hose with the push pin to the Gas side service port.
4. Air purging of the charge hose.
    - Open the low-pressure valve on the charge set slightly to purge air from the charge hose.
5. Set the Liquid side 3-way valve to the close position.
6. Operate the air conditioner at the cooling cycle and stop it when the gauge indicates 0 kg/cm^{2}G (0 MPa).

- **If the unit cannot be operated at the cool condition (weather is rather cool), press the Pump Down Switch on the Indoor unit.**
- **So that the unit can be operated.**

7. Immediately set the gas side 3-way valve to the close position.

- **Do this quickly so that the gauge ends up indicating 1 to 3 kg/ cm_2G (0.1 MPa to 0.3 MPa)**

8. Use refrigerant reclaiming equipment to collect refrigerant from indoor unit and pipes.

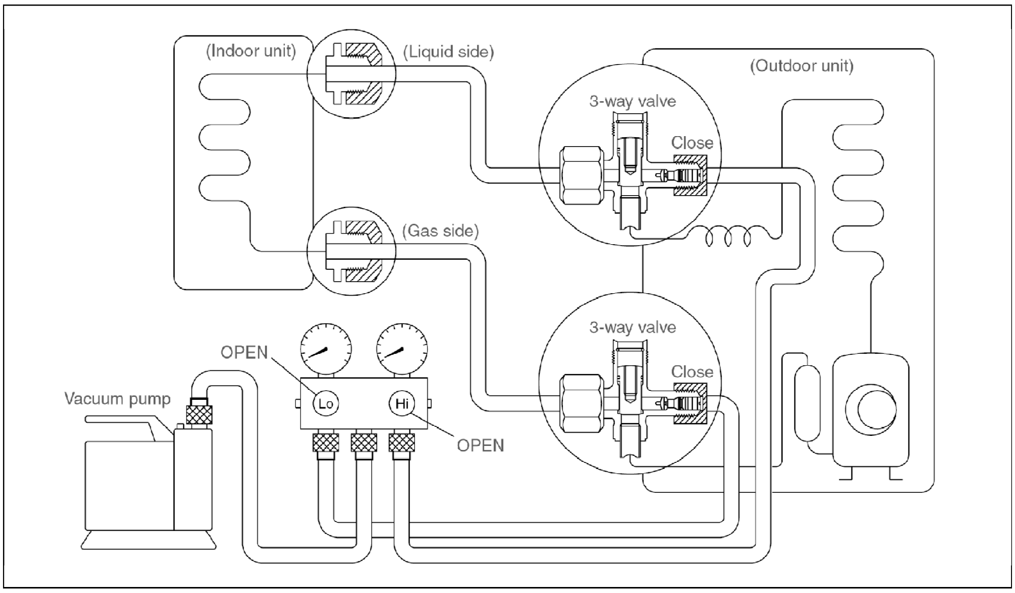
9. Disconnect the charge set, and mount both the 3-way valve's stem nuts and the service port caps.

- **Use a torque wrench to tighten the service port cap to a torque of 18 N.m.**
- **Be sure to check for gas leakage.**

10. Disconnect pipes from indoor unit and outdoor unit.

11.1.3. Evacuation of Re-installation

WHEN REINSTALLING AN AIR CONDITIONER, BE SURE TO EVACUATE THE AIR INSIDE THE INDOOR UNIT AND PIPES in the following procedure.
If air remains in the indoor unit and refrigeration pipes, it will affect the compressor, reduce to cooling capacity, and could lead to a malfunction.


(Indoor unit)
(Liquid side)
(Outdoor unit)
3-way valve
Close
(Gas side)
3-way valve
Close
OPEN
Lo
Hi
OPEN
Vacuum pump

Procedure:

1. Connect a charging hose with a push pin to the Low and High sides of a charging set and the service port of the 3-way valve.
   - Be sure to connect the end of the charging hose with the push pin to the service port.
2. Connect the centre hose of the charging set to a vacuum pump.
3. Turn on the power switch of the vacuum pump and make sure that the needle in the gauge moves from 0 cmHg (0 MPa) to -76 cmHg (-0.1 MPa). Then evacuate the air for approximately 10 minutes.
4. Close the valve of both Low side and High side of the charging set and turn off the vacuum pump. Make sure that the needle in the gauge does not move after approximately 5 minutes.
   BE SURE TO TAKE THIS PROCEDURE IN ORDER TO AVOID REFRIGERANT GAS LEAKAGE.
5. Disconnect the charging hose from the vacuum pump.
6. Charge the pipes and indoor unit with gas refrigerant from liquid (High) side 3-way valve service port and then discharge the refrigerant until gas side (Low) side gauge needle indicates 3 kg/cm^2 (0.3 MPa).
   - BE SURE TO USE REFRIGERANT RECLAIMING EQUIPMENT WHILE DISCHARGING THE REFRIGERANT.
   - Purge the air from charge set’s centre hose.
   - Be sure to check for gas leakage.

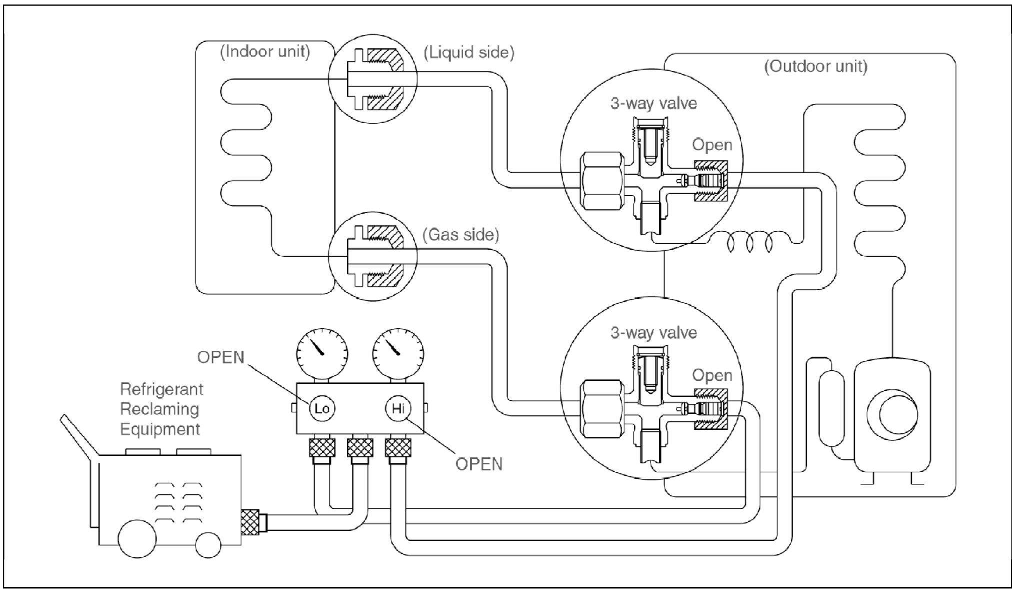
Caution

If gauge needle does not move from 0 cmHg (0 MPa) to -76 cmHg (-0.1 MPa) in step (3) above, take the following measures:
If the leaks stop when the piping connections are tightened further, continue working from step 3.
If the leaks do not stop when the connections are retightened, repair the location of the leak.

7. **Tighten the service port caps of both the 3-way valves at a torque of 18 N.m with a torque wrench.**
8. **Remove the valve caps of both the 3-way valves. Position both of the valves to "open" using a hexagonal wrench (4 mm).**
9. **Mount valve caps onto the 3-way valves.**

11.1.4. Balance refrigerant of the 3-way valves

(Lack of refrigerant in the refrigeration cycle)


(Indoor unit)
(Liquid side)
(Outdoor unit)
3-way valve
Open
(Gas side)
3-way valve
Open
OPEN
Refrigerant
Reclaming
Equipment
Lo
Hi
OPEN

Procedure:

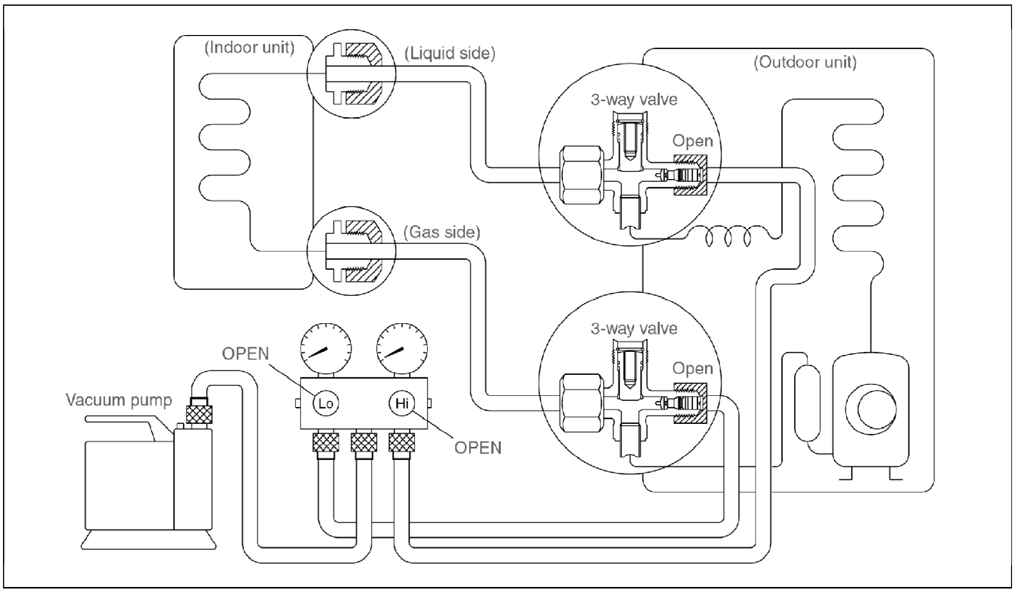
1. **Confirm that both the 3-way valves are set to the opened position.**
2. **Connect the charge set to the 3-way valve's service port.**

  - **Leave the valve on the charge set closed.**
  - **Connect the charge hose with the push-pin to the service port.**
  - **Confirm whether the pressure indicates more than 0.1 MPa (1 kg/cm$_2$G).**

3. **Connect the charge set's centre hose to refrigerant reclaiming equipment.**
4. **Open the valve (Low side) on the charge set and loosen the hose connected with the Refrigerant Reclaiming Equipment to purge the air from the hose.**
5. **Turn on refrigerant reclaiming equipment to collect the refrigerant until the needle indicates 0 (no refrigerant is remaining).**

11.1.5. Evacuation

(No refrigerant in the refrigeration cycle)


(Indoor unit)
(Liquid side)
(Outdoor unit)
3-way valve
Open
(Gas side)
3-way valve
Open
OPEN
Vacuum pump
Lo
Hi
OPEN

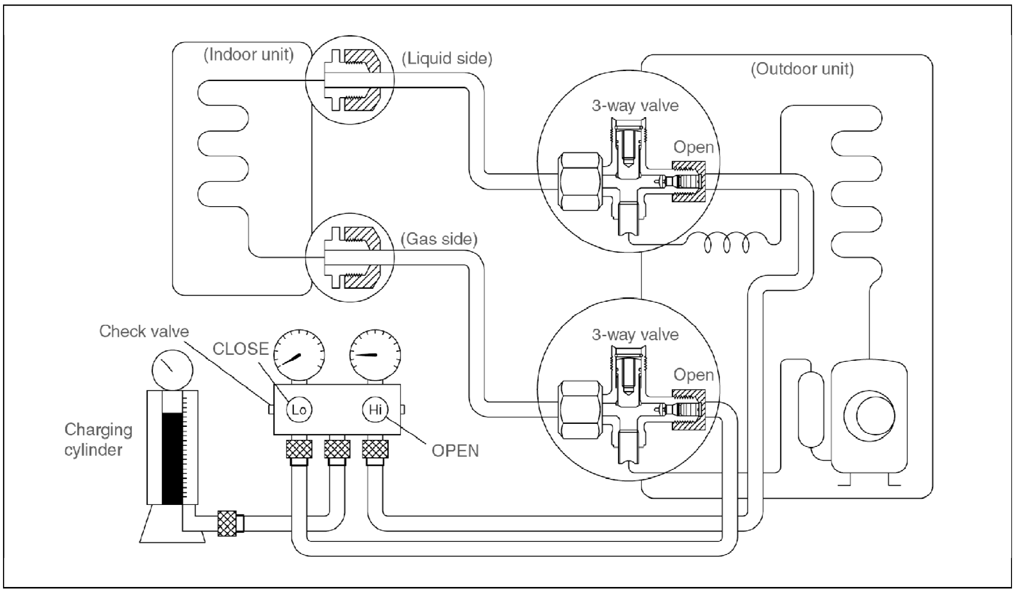
Procedure:

1. **Connect the vacuum pump to the charge set's centre hose.**
2. **Turn on the vacuum pump to evacuate the unit.**
   - **Confirm that the gauge needle has moved toward -76 cmHg (-0.1 MPa).**
   - **Apply the vacuum for approximately 1 hour (vacuum of 4 mmHg or less).**

3. Close the valves (Low side and High side) on the charge set, turn off the vacuum pump, and confirm that the gauge needle does not move (approximately 5 minutes after the vacuum pump is turned off).
4. Disconnect the charge hose from the vacuum pump.

11.1.6. Gas charging

(After Evacuation)


(Indoor unit)
(Liquid side)
(Outdoor unit)
3-way valve
Open
(Gas side)
Check valve
CLOSE
3-way valve
Open
Lo
Hi
Charging cylinder
OPEN

Procedure:

1. Connect the charge hose to the charging cylinder.

   - Connect the charge hose which you disconnected from the vacuum pump to the valve at the bottom of the cylinder.

2. Purge the air from the charge hose.

   - Open the valve at the bottom of the cylinder and use a screwdriver to press the check valve on the charge set to purge the air (be careful of the liquid refrigerant).

3. Open the High side on the charge set and charge the refrigerant to the unit.

   - Be sure to open only the High side valve on the charge set to charge the system from the liquid-side (high-pressure) pipe. (If

the system cannot be charged with the specified amount of refrigerant, operate the compressor until the specified amount can be charged, and then close the valve at the bottom of the charge cylinder.)

4. **Immediately disconnect the charge hoses from both 3-way valve service ports.**
5. **Mount the valve stem nuts and the service port caps onto the 3-way valves.**
   - **Use torque wrench to tighten the service port caps to a torque of 18 N.m.**
   - **Be sure to check for gas leakage.**

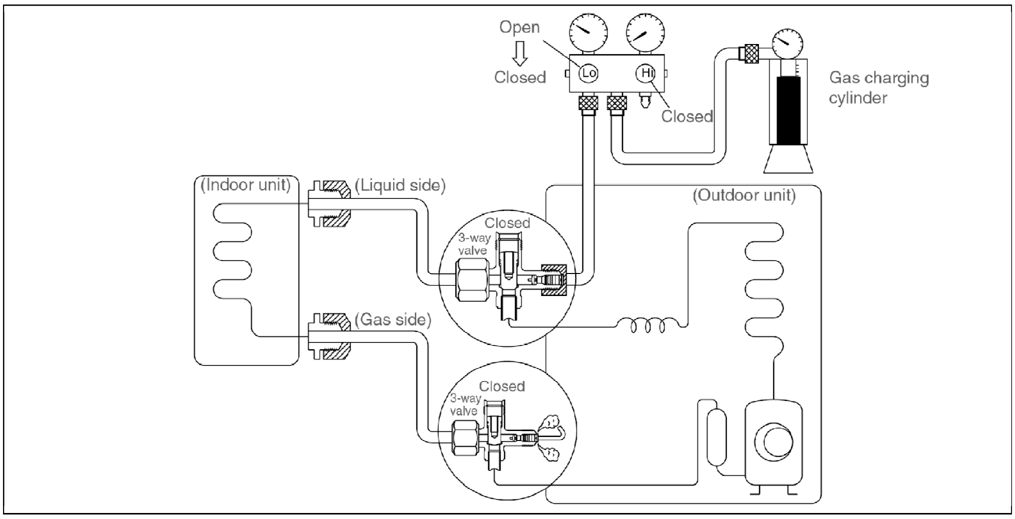
11.2. Air Purging of the Piping and Indoor Unit

11.2.1. Air purging

Required tools:

Hexagonal wrench, adjustable wrench, torque wrenches, wrench to hold the joints, gas leak detector, and charging set.

The air in the indoor unit and in the piping must be purged. If air remains in the refrigeration pipes, it will affect the compressor, reduce the cooling capacity, and could lead to a malfunction.


Open
Closed
Lo
Hi
Closed
Gas charging cylinder
(Indoor unit)
(Liquid side)
Closed
3-way valve
(Outdoor unit)
(Gas side)
Closed
3-way valve

Service port cap

Be sure, using a torque wrench to tighten the service port nut (after using the service port), so th prevents the gas leakage from the refrigeration cycle.

Procedure:

1. Recheck the piping connections.

2. Open the valve caps and service port caps for both / 3-way valves.

3. Connect the charging cylinder to the manifold gauge as shown above.

4. Open the valve of the low pressure side of manifold gauge counterclockwise for 10 seconds, and then close it.

5. Check for gas leakage.

- Check the flare connections for gas leakage.

6. Purge the air from the system.

- Open the Low pressure side valve of the manifold gauge.

- Press the service port pin with the hexagonal wrench to purge the air for three seconds and then wait for one minute. / Repeat this three times or more.

7. Balance the refrigerant in the pipings and the indoor unit.

- Close the Low pressure side valve of the manifold gauge.

- Press the service port pin with the hexagonal wrench to release the refrigerant until the gauge indicates 0.1 to 0.3 MPa.

8. Use torque wrench to tighten the service port cap to a torque of 18 N.m.

9. Set the both 3-way valves to the open position.

10. Mount the valve caps to the 3-way valves.

11. Check for gas leakage.

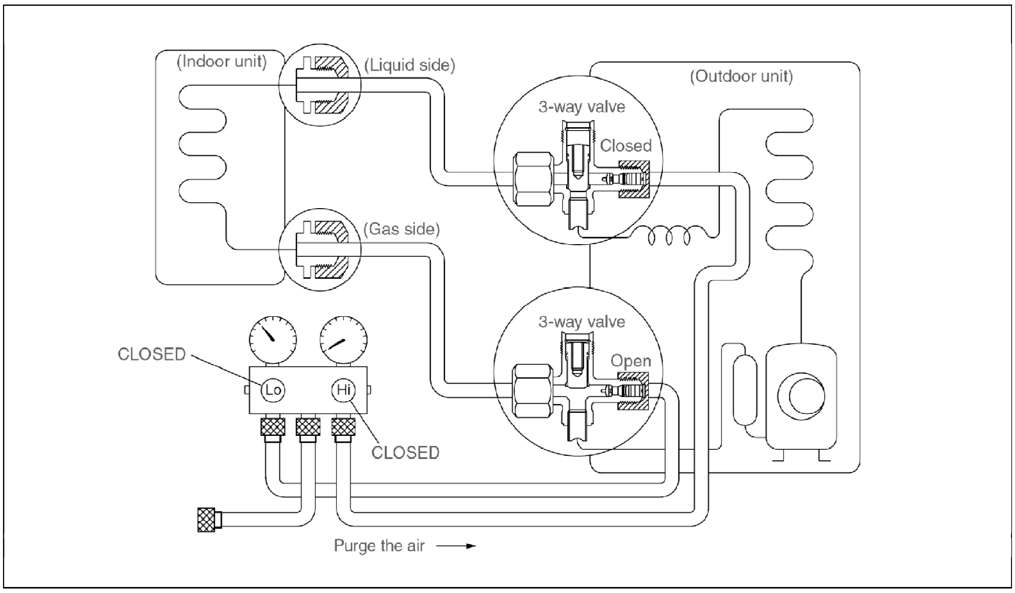
- At this time, especially check for gas leakage from the both 3-way valve's caps, and from the service port caps.

Caution

If gas leakage is discovered in step (3) above, take the following measures:

1. Re-tighten the connecting portion with torque wrenches.
   If the leakage ceases, continue the works from step (4).
2. Locate and repair the leak. (Gas leak detector)
   Repeat the works from step (1).

11.2.2. Pumping down


(Indoor unit)
(Liquid side)
(Outdoor unit)
3-way valve
Closed
(Gas side)
3-way valve
Open
CLOSED
Lo
Hi
CLOSED
Purge the air

Procedure:

1. Confirm that both the 3-way valves are set to the open position.
   - Remove the valve caps and confirm that the valve caps are in the raised position.
   - Be sure to use a hexagonal wrench to operate the valve stems.
2. Operate the unit for 10 to 15 minutes.
3. Stop operation and wait for 3 minutes, then connect the manifold gauge to the service port of the 3-way valve as shown above.

- Connect the manifold gauge to the gas side service port.

4. Air purging of the charge hose.

   - Open the Low pressure side valve of manifold gauge slightly to purge air from the charge hose.

5. Set the liquid side (High side) 3-way valve to the close position.
6. Operate the air conditioner at the cooling cycle and stop it when the gauge indicates 0.1 MPa.

   - If the unit cannot be operated at the cooling (weather is rather cool), press the Pump Down switch on the Indoor unit.
   - So that the unit can be operated.

7. Immediately set the gas side (Low side) 3-way valve to the close position.

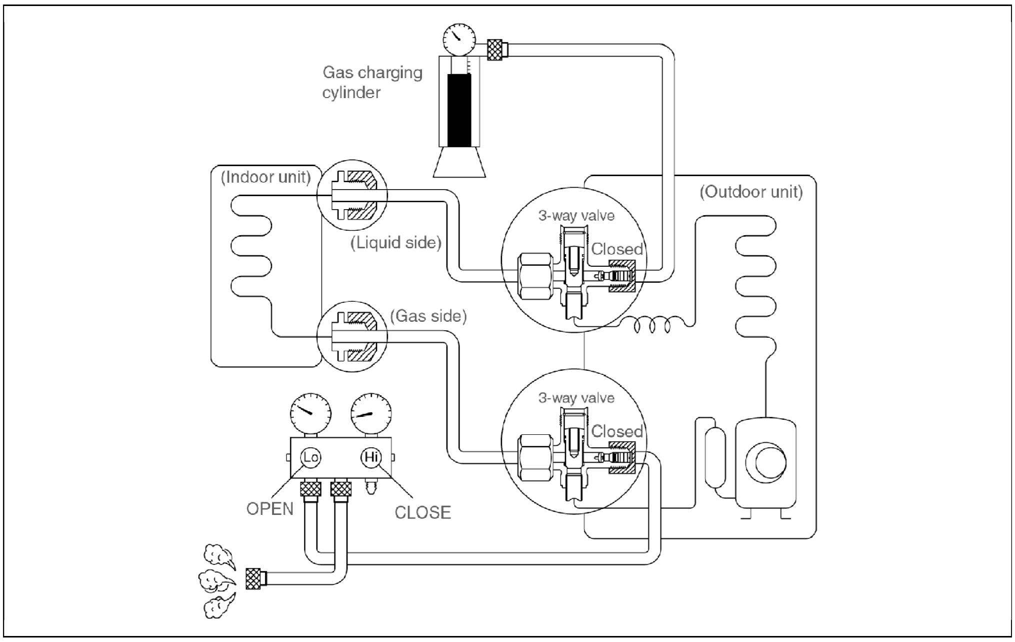
   - Do this quickly so that the gauge ends up indicating 0.1 0.3 MPa.

8. Disconnect the manifold gauge, and mount both the / 3-way valve’s caps and the service port caps.

   - Use torque wrench to tighten the service port nut to a torque of 18 N.m.
   - Be sure to check for gas leakage.

11.2.3. Re-air purging

(Re-installation)


Gas charging cylinder
(Indoor unit)
(Outdoor unit)
3-way valve
Closed
(Liquid side)
(Gas side)
3-way valve
Closed
Lo
Hi
OPEN
CLOSE

Procedure:

1. **Remove the cap nut from 3-way valves.**
    - **Remove the cap nut from 3-way valves after carefully checked whether the piping connection was properly and certainly done.**
2. **Confirm that valve in both 3-way valves are set to the CLOSE.**
3. **Connect the gas cylinder to the liquid-side (high-pressure) 3-way valve and the charge set to the gas side (low-pressure) 3-way valve.**
    - **Remove the flare nut from the service ports to connect the manifold gauge and gas cylinder.**
    - **Close the valves on the gas cylinder and manifold gauge.**
4. **Air purging.**
    - **Open the valve on the gas cylinder.**
    - **Open the valve on the manifold gauge, discharge for three seconds and wait for one minute. Repeat this three times.**
5. **Check for gas leakage.**
    - **Check the flare connections for gas leakage.**

6. Discharge the refrigerant.

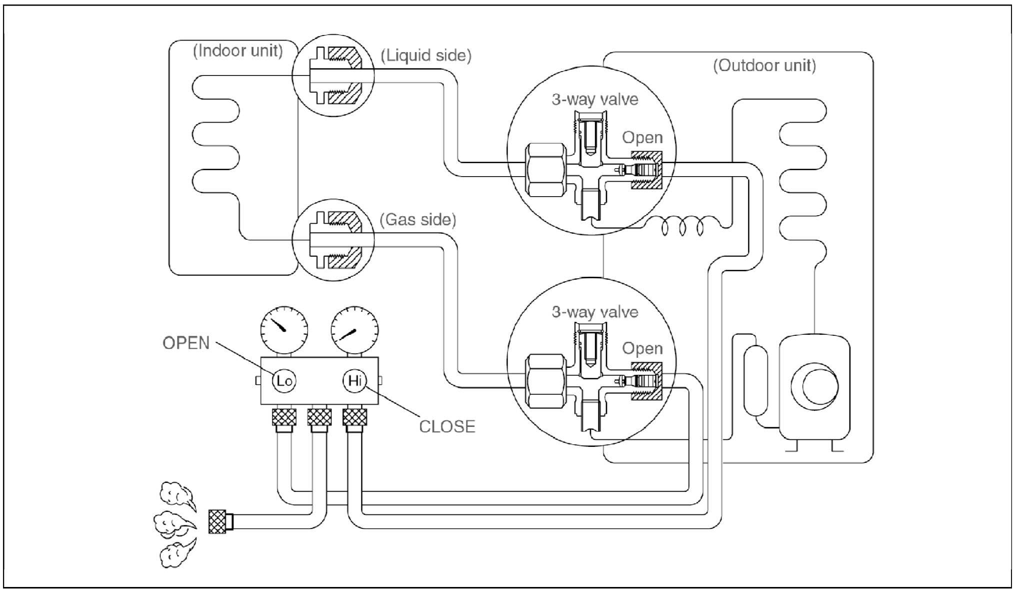
- **Close the valve on the gas cylinder and discharge the refrigerant until the gauge indicates 0.1 to 0.3 MPa.**

7. Disconnect the manifold gauge and gas cylinder.

8. Mount the valve caps and the service port caps onto the 3-way valves.

- **Be sure to use a torque wrench to tighten the service port nut.**
- **Be sure to check for gas leakage.**

11.2.4. Balance refrigerant of the 3-way valves


(Indoor unit)
(Liquid side)
(Outdoor unit)
3-way valve
Open
(Gas side)
3-way valve
Open
OPEN
Lo
Hi
CLOSE

Procedure:

1. Confirm that both the 3-way valves are set to the open position.

2. Connect the manifold gauge to the gas side (Low side) 3-way valve’s port.

- **Leave the valve on the manifold gauge closed.**
- **Connect the manifold gauge to the service port.**

3. Open the valves (Low side) on the manifold gauge and discharge the refrigerant until the gauge indicates 0.1 MPa .

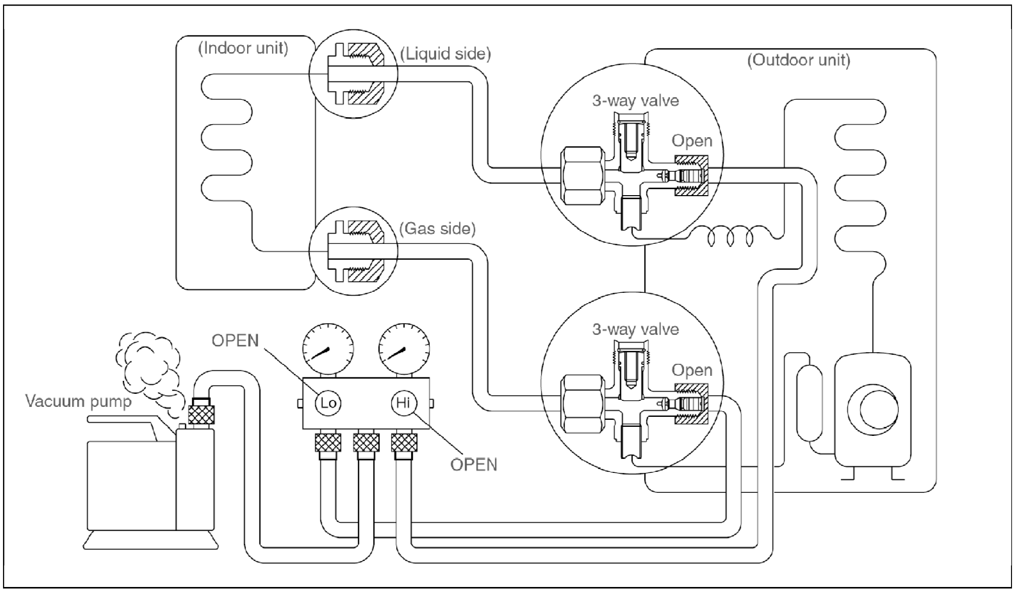
- **If there is no air in the refrigeration cycle [the pressure when**

the air conditioner is not running is higher than 0.1 MPa]. If this is the case, it will not be necessary to apply a evacuation.

- Discharge the refrigerant gradually; if it is discharged too suddenly, the refrigeration oil will also be discharged.

11.2.5. Evacuation

(No refrigerant in the refrigeration cycle)


(Indoor unit)
(Liquid side)
(Outdoor unit)
3-way valve
Open
(Gas side)
3-way valve
Open
OPEN
Vacuum pump
Lo
Hi
OPEN

Procedure:

1. Connect the vacuum pump to the manifold gauge's centre hose.

2. Evacuation for approximately one hour.

- Confirm that the gauge needle has moved toward -0.01 MPa.

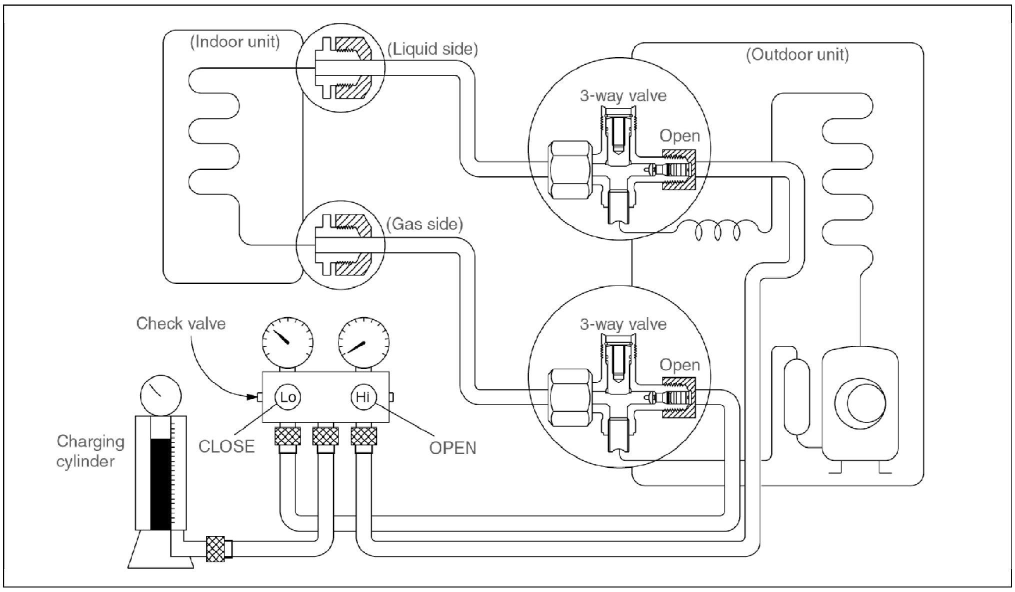
3. Close the valve (Low side) on the manifold gauge, turn off the vacuum pump, and confirm that the gauge needle does not move (approximately 5 minutes after turning off the vacuum pump).

4. Disconnect the manifold gauge from the vacuum pump.

- Vacuum pump oil.
If the vacuum pump oil becomes dirty or depleted, replenish as needed.

11.2.6. Gas charging

(After Evacuation)


(Indoor unit)
(Liquid side)
(Outdoor unit)
3-way valve
Open
(Gas side)
Check valve
3-way valve
Open
Lo
Hi
Charging cylinder
CLOSE
OPEN

Procedure:

1. **Connect the charge hose to the gas charging cylinder.**

   - Connect the charge hose which you disconnected from the vacuum pump to the valve at the bottom of the cylinder.

2. **Purge the air from the charge hose.**

   - Open the valve at the bottom of the cylinder and press the check valve on the charge set to purge the air. (Be careful of the liquid refrigerant). The procedure is the same if using a gas cylinder.

3. **Open the valve (Low side) on the charge set and charge the system with liquid refrigerant.**

   - If the system cannot be charged with the specified amount of refrigerant, it can be charged with a little at a time (approximately 150g each time) while operating the air conditioner in the cooling cycle; however, one time is not sufficient, wait approximately 1 minute and then repeat the procedure. (pumping down-pin)

4. Immediately disconnect the charge hose from the / 3-way valve's service port.

- **Stopping partway will allow the refrigerant to be discharged.**
- **If the system has been charged with liquid refrigerant while operating the air conditioner, turn off the air conditioner before disconnecting the hose.**

5. Mount the valve caps and the service port caps.

- **Use a torque wrench to tighten the service port nut.**
- **Be sure to check for gas leakage.**

12. Servicing Information

12.1. Indoor Electronic Controllers Removal Procedures

1. The Electronic Controller, a Signal Receiver and an Indicator (Fig. 3) can be seen by the below steps:

- **Open the Intake Grille and remove the screw at the front of the Front Grille. (Fig. 1).**
- **Remove the 3 caps and 3 screws at the bottom of the Front Grille. (Fig. 1)**
- **Remove the Front Grille by releasing the 3 hooks at the top of the Front Grille. (Fig. 1)**
- **Unhook the tabs at the Control Board to remove the Control Board Cover. (Fig. 2)**

2. To remove the Electronic Controllers:

- **Release the 2 Particular Piece. (Fig. 3)**
- **Release the CN-REC/DISP connectors. (Fig. 4)**
- **Release the CN-TH connector. (Fig. 4)**
- **Release the CN-MAIN connector. (Fig. 4)**
- **Release the CN-001 connector. (Fig. 4)**
- **Release the CN-002 connector. (Fig. 4)**
- **Release the CN-STM1 connector. (Fig. 4)**
- **Release the CN-STM2 connector. (Fig. 4)**
- **Release the hooks that hold the Electronic Controller. (Fig. 3)**

Fig. 1

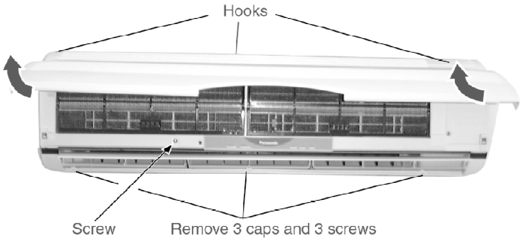

Hooks
Screw
Remove 3 caps and 3 screws

Fig. 2

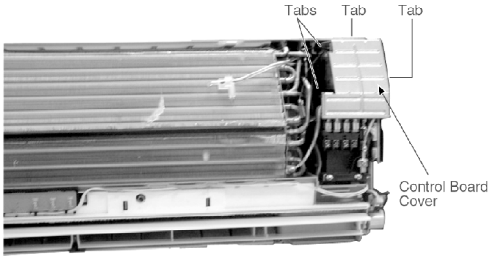

Tabs
Tab
Tab
Control Board Cover

Fig. 3

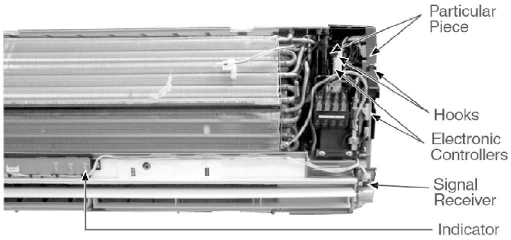
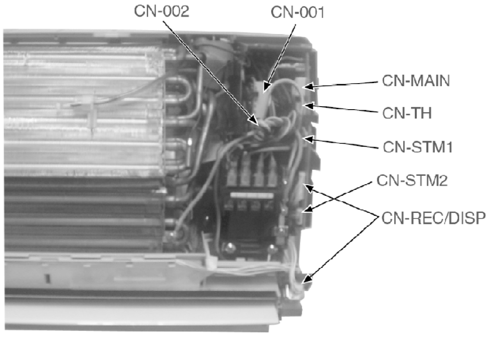

Particular Piece
Hooks
Electronic Controllers
Signal Receiver
Indicator

Fig. 4


CN-002
CN-001
CN-MAIN
CN-TH
CN-STM1
CN-STM2
CN-REC/DISP

12.2. Cross Flow Fan Indoor and Fan Motor Removal Procedures

1. In order to remove the Cross Flow Fan and Indoor Fan Motor, Control Board need to be taken out by releasing all the connectors as indicated below.
   A. Release the Earth Wire screw. (Fig. 5)
   B. Release the Intake Air Sensor. (Fig. 5)
   C. Release the Piping Sensor. (Fig. 5)
   D. Release the CN-REC/DISP connectors. (Fig. 5)

E. Release the CN-STM1 connector. (Fig. 5)

2. Pull out the Drain Hose from outlet to remove the Discharge Grille. (Fig. 6)
3. Removing the right and left screws. (Fig. 7)
4. By pressing down the hook at the left and pushing up the hook at the right, you will be able to remove the Control Board. (Fig. 7)
5. Remove the screw at the Cross Flow Fan. (Fig. 8)

Fig. 5

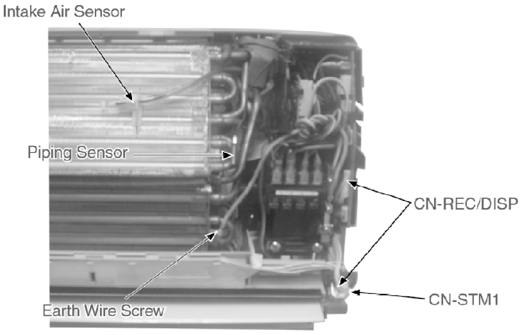

Intake Air Sensor
Piping Sensor
CN-REC/DISP
CN-STM1
Earth Wire Screw

Fig. 6

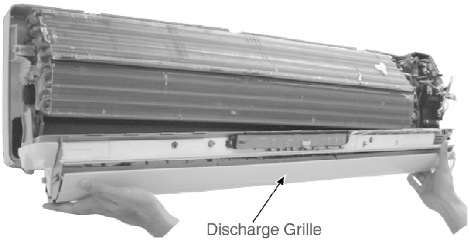

Discharge Grille

Fig. 7

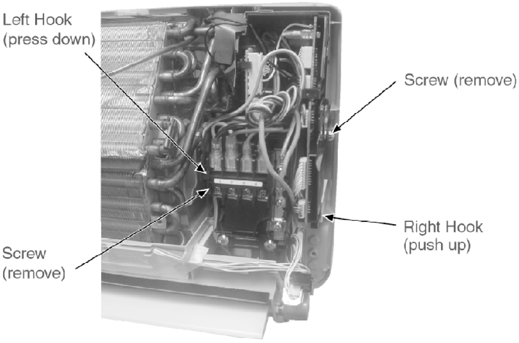
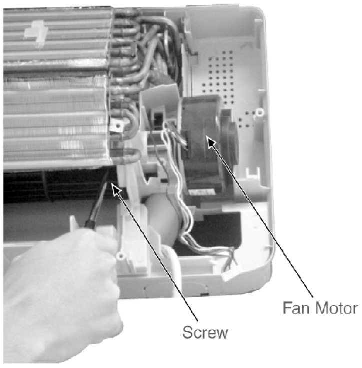

Left Hook
(press down)
Screw (remove)
Right Hook
(push up)
Screw
(remove)

Fig. 8


Fan Motor
Screw

6. Remove the Bearing. (Fig. 9)

7. Remove the screws at the left of the Evaporator. (Fig. 9)

8. Push up the Evaporator and pull out the Cross Flow Fan from shaft. By then, Fan Motor can be taken out. (Fig. 10).
REMINDER - To reinstall the Fan Motor, put it back in place, adjust the position of the Fan Motor's leadwire appropriately as shown in the Fig. 8 0before installing the Cross Flow Fan.

Fig. 9

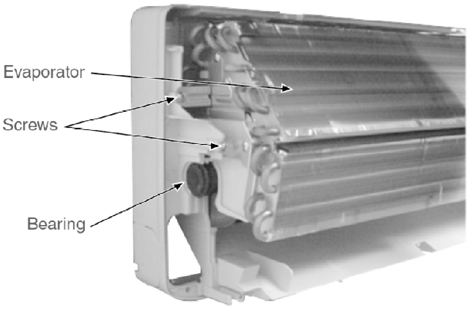
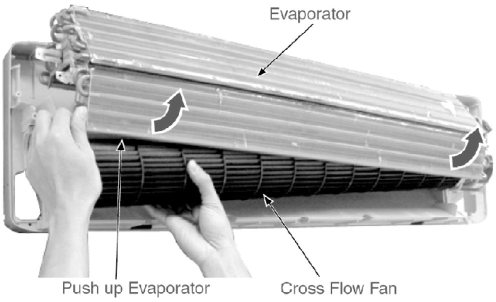

Evaporator
Screws
Bearing

Fig. 10


Evaporator
Push up Evaporator
Cross Flow Fan

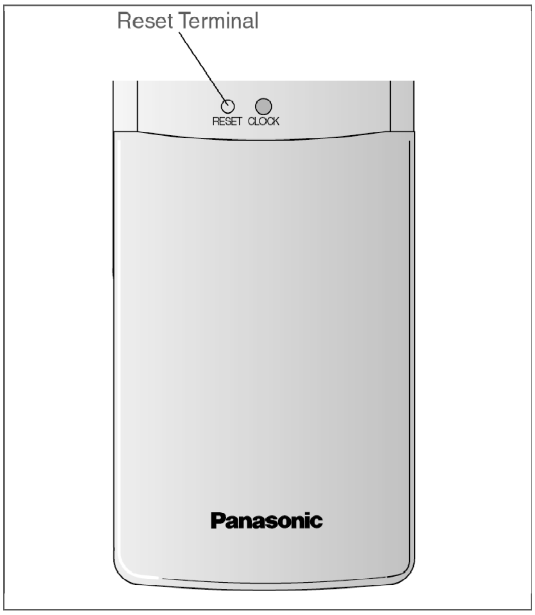
- Remote Control Reset

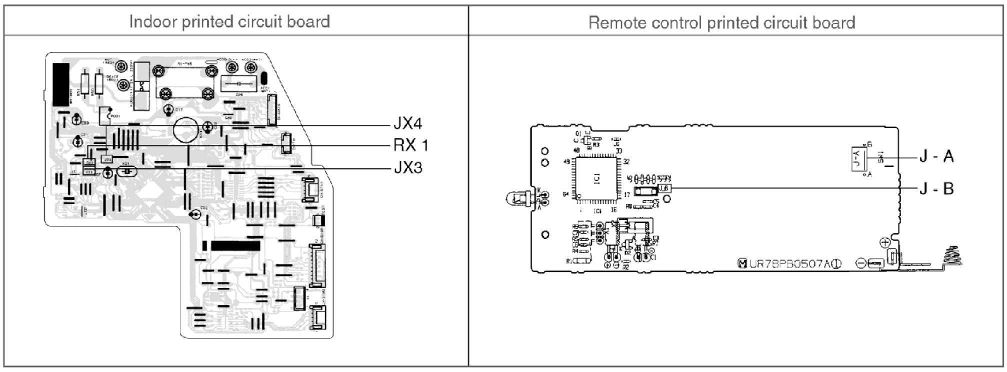
When the batteries are inserted for the first time, or the batteries are replaced, all the indications will blink and the remote control might not work.
If this happen, remove the cover of the remote control and you will

find a resetting terminal, and by shorting it with a minus screwdriver, it will return to normal.

- Changing the wireless remote control transmission code

When two indoor units are installed in the same room, in order to prevent operating errors caused by using two remote controls, cut a jumper wire at the remote control printed circuit board (J - A) and cut a jumper wire at the indoor printed circuit board (JX4). It is possible to select from 4 types of transmission codes including one at time of delivery condition (0).


Reset Terminal
RESET
CLOCK
Panasonic


Indoor printed circuit board
Remote control printed circuit board
JX4
RX 1
JX3
J - A
J - B

	Remote control printed circuit board		Indoor printed circuit board			Note
	J - A	J - B	JX3	JX4	RX 1	
0	SHORT	OPEN	SHORT	SHORT	——	At product delivery
1	OPEN	OPEN	SHORT	OPEN	——	
2	SHORT	SHORT	OPEN	OPEN	10 KΩ	
3	OPEN	SHORT	SHORT	OPEN	10 KΩ	

13. Troubleshooting Guide

13.1. Refrigeration cycle system

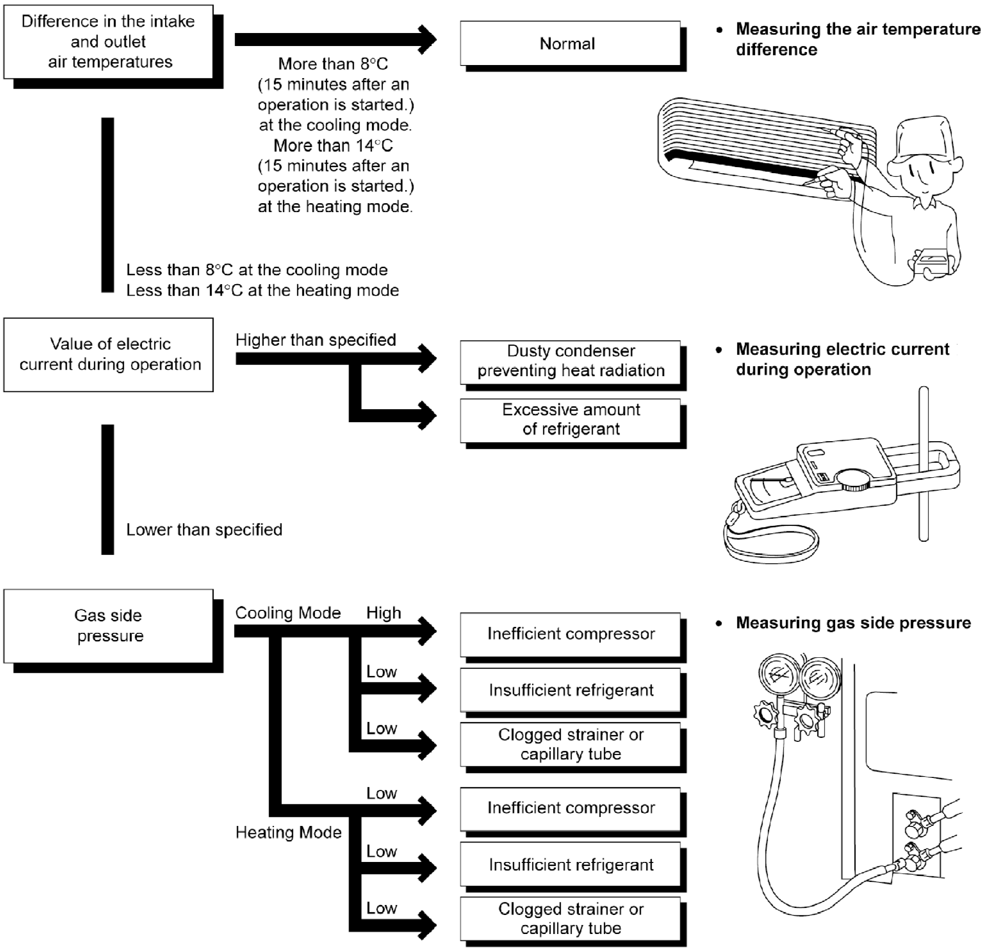
In order to diagnose malfunctions, make sure that there are no electrical problems before inspecting the refrigeration cycle. Such problems include insufficient insulation, problem with the power source, malfunction of a compressor and a fan.

The normal outlet air temperature and pressure of the refrigeration cycle depends on various conditions, the standard values for them are shown in the table on the right.

Normal Pressure and Outlet Air Temperature (Standard)

	Gas pressure Mpa (kg/cm²G)	Outlet air temperature (°C)
Cooling Mode	0.4 ~ 0.6 (4 ~ 6)	12 ~ 16
Heating Mode	1.5 ~ 2.1 (15 ~ 21)	36 ~ 45

* Condition: Indoor fan speed; High
Outdoor temperature 35°C at the cooling mode and 7°C at the heating mode


Difference in the intake and outlet air temperatures
More than 8°C (15 minutes after an operation is started.) at the cooling mode. More than 14°C (15 minutes after an operation is started.) at the heating mode.
Normal
• Measuring the air temperature difference
Less than 8°C at the cooling mode
Less than 14°C at the heating mode
Value of electric current during operation
Higher than specified
Dusty condenser preventing heat radiation
Excessive amount of refrigerant
• Measuring electric current during operation
Lower than specified
Gas side pressure
Cooling Mode
High
Inefficient compressor
Low
Insufficient refrigerant
Low
Clogged strainer or capillary tube
• Measuring gas side pressure
Heating Mode
Low
Inefficient compressor
Low
Insufficient refrigerant
Low
Clogged strainer or capillary tube

13.1.1. Relationship between the condition of the air conditioner and pressure and electric current

Condition of the air conditoner	Cooling Mode			Heating Mode		
	Low Pressure	High Pressure	Electric current during operation	Low Pressure	High Pressure	El cu du op
Insufficient refrigerant (gas leakage)	↘	↘	↘	↘	↘	↘
Clogged capillary tube or Strainer	↘	↘	↘	↘	↘	↘
Short circuit in the indoor unit	↘	↘	↘	↗	↗	↗
Heat radiation deficiency of the outdoor unit	↗	↗	↗	↘	↘	↘
Inefficient compression	↗	↘	↘	↗	↘	↘

- Carry out the measurements of pressure, electric current, and temperature fifteen minutes after an operation is started.

13.1.2. Diagnosis methods of a malfunction of a compressor and 4-way valve

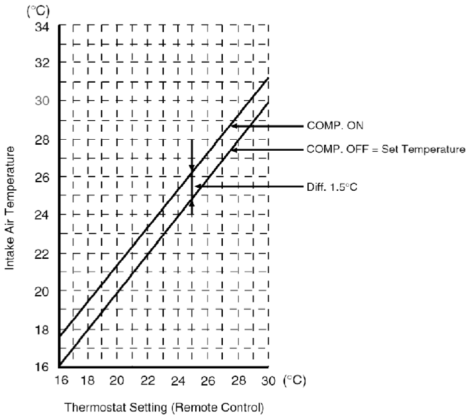
Nature of fault	Symptom
Insufficient compressing of a compressor	-Electric current during operation becomes approximately 20% lower than the normal valu -The discharge tube of the compressor becomes abnormally hot (normally 70 to 90°C). -The difference between high pressure and low pressure becomes almost zero.
Locked compressor	-Electric current reaches a high level abnormally, and the value exceeds the limit of an am some cases, a breaker turns off. -The compressor is a humming sound.
Insufficient switches of the 4-way valve	-Electric current during operation becomes approximately 80% lower than the normal valu -The temperature different between from the discharge tube to the 4-way valve and from s to the 4-way valve becomes almost zero.

14. Technical Data

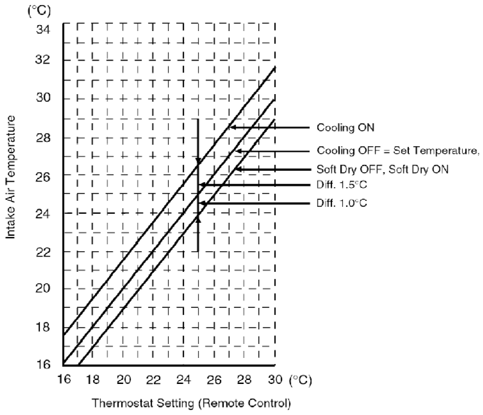
■ Thermostat characteristics

CS-A18BK / CS-A24BK

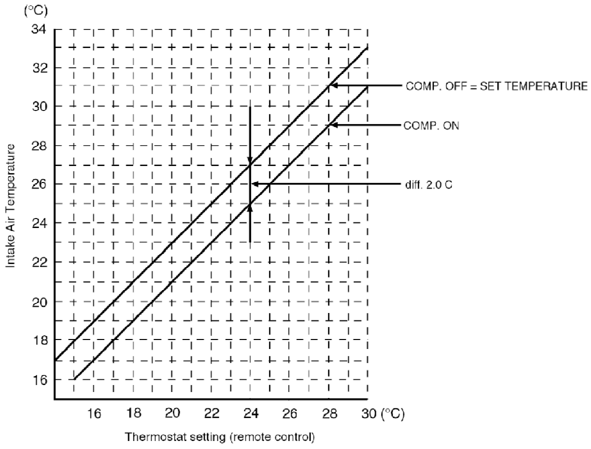
- **Cooling**



- **Soft Dry**



- **Heating**



■ Sensible Capacity Chart

- **CS-A18BK**

240V	Outdoor Temp. (°C)											
Indoor wet bulb temp.	30			35			40			46		
	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
17.0°C	5.26	3.99	1.66	4.91	3.82	1.78	4.57	3.67	1.91	4.16	3.49	2.06
19.0°C				5.30		1.81						
19.5°C	5.77	4.17	1.69	5.40	4.01	1.82	5.02	3.86	1.94	4.56	3.67	2.10
22.0°C	6.29	4.33	1.72	5.88	4.16	1.85	5.47	4.01	1.98	4.97	3.83	2.13

230V	Outdoor Temp. (°C)											
Indoor wet bulb temp.	30			35			40			46		
	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
17.0°C	5.26	3.99	1.61	4.91	3.82	1.73	4.57	3.67	1.86	4.16	3.49	2.00
19.0°C				5.30		1.76						
19.5°C	5.77	4.17	1.64	5.40	4.01	1.77	5.02	3.86	1.89	4.56	3.67	2.04
22.0°C	6.29	4.33	1.67	5.88	4.16	1.80	5.47	4.01	1.92	4.97	3.83	2.08

220V	Outdoor Temp. (°C)											
Indoor wet bulb temp.	30			35			40			46		
	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
17.0°C	5.26	3.99	1.58	4.91	3.82	1.69	4.57	3.67	1.81	4.16	3.49	1.96
19.0°C				5.30		1.72						
19.5°C	5.77	4.17	1.60	5.40	4.01	1.73	5.02	3.86	1.85	4.56	3.67	1.99
22.0°C	6.29	4.33	1.63	5.88	4.16	1.76	5.47	4.01	1.88	4.97	3.83	2.03

- **CS-A24BK**

240V	Outdoor Temp. (°C)											
Indoor wet bulb temp.	30			35			40			46		
	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
17.0°C	6.62	5.02	2.63	6.18	4.81	2.83	5.75	4.62	3.02	5.23	4.39	3.26
19.0°C				6.67		2.87						
19.5°C	7.26	5.25	2.68	6.79	5.05	2.88	6.32	4.86	3.08	5.74	4.62	3.32
22.0°C	7.92	5.45	2.73	7.40	5.24	2.93	6.88	5.05	3.14	6.26	4.82	3.38

230V	Outdoor Temp. (°C)											
Indoor wet bulb temp.	30			35			40			46		
	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
17.0°C	6.62	5.02	2.56	6.18	4.81	2.76	5.75	4.62	2.95	5.23	4.39	3.18
19.0°C				6.67		2.80						
19.5°C	7.26	5.25	2.61	6.79	5.05	2.81	6.32	4.86	3.01	5.74	4.62	3.24
22.0°C	7.92	5.45	2.66	7.40	5.24	2.86	6.88	5.05	3.06	6.26	4.82	3.30

220V	Outdoor Temp. (°C)											
Indoor wet bulb temp.	30			35			40			46		
	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
17.0°C	6.79	5.14	2.38	6.34	4.93	2.56	5.90	4.74	2.74	5.36	4.50	2.96
19.0°C				6.84		2.60						
19.5°C	7.45	5.39	2.43	6.96	5.17	2.61	6.48	4.98	2.79	5.89	4.74	3.01
22.0°C	8.12	5.59	2.47	7.59	5.37	2.66	7.06	5.18	2.84	6.42	4.94	3.07

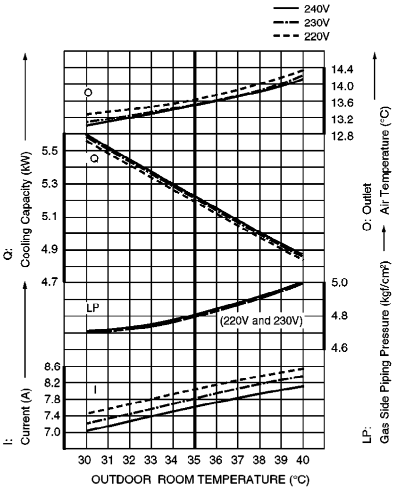
TC - Total Cooling Capacity (kW)
SHC - Sensible Heat Capacity (kW)
IP - Input Power (kW)

Indoor 27°C/19°C
Outdoor 35°C/24°C

Operation characteristics

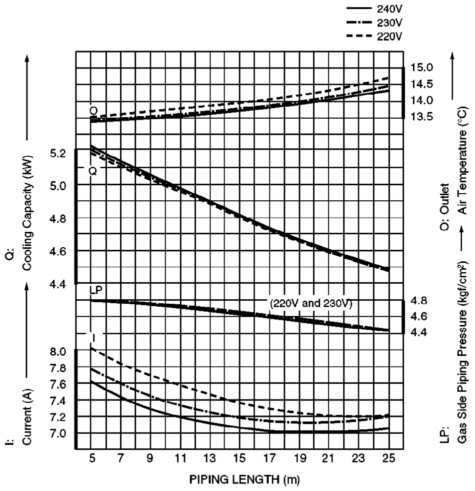
CS-A18BK / CU-A18BK

• Cooling Characteristic



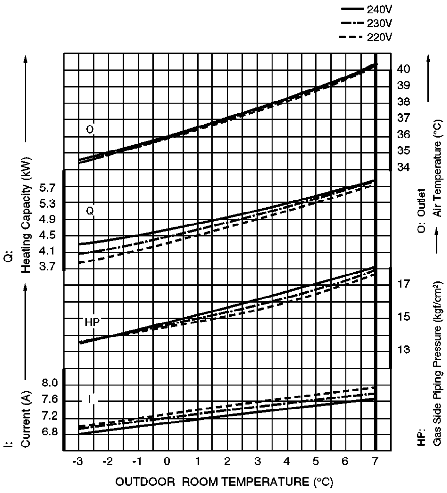
[Condition] Room temperature: 27/19°C
Cooling operation: At High fan
Piping length: 5 m

• Piping Length Characteristic (Cooling)



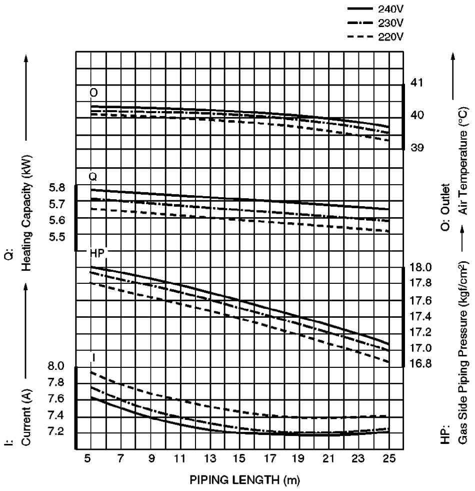
[Condition] Room temperature: 27/19°C
Outdoor temperature: 35/24°C
Cooling opeartion: At High fan

• Heating Characteristic



[Condition] Room temperature: 20°C
Heating operation: At High fan
Piping length: 5 m

• Piping Length Characteristic (Heating)

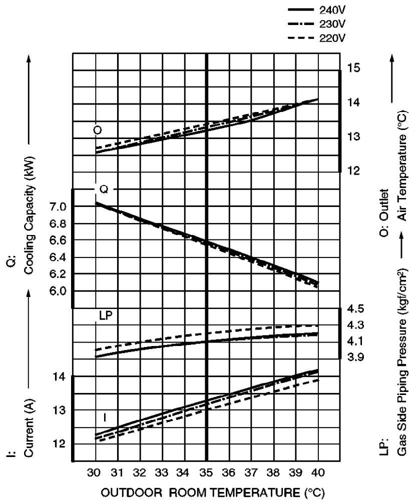


[Condition] Room temperature: 20°C
Outdoor temperature: 7/6°C
Heating opeartion: At High fan

■ Operation characteristics

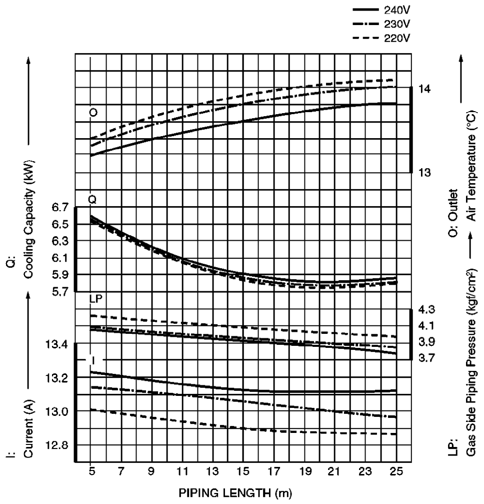
CS-A24BK / CU-A24BK

- **Cooling Characteristic**



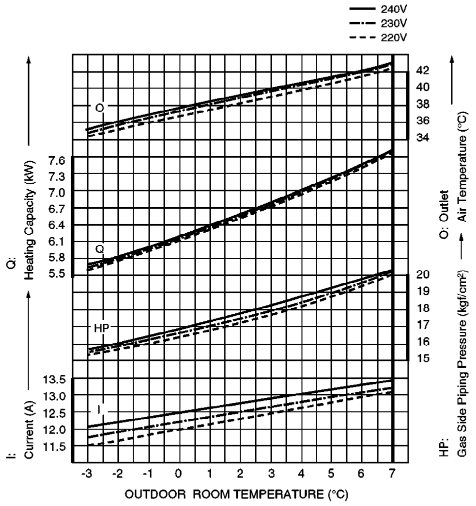
[Condition] Room temperature: 27/19°C
Cooling operation: At High fan
Piping length: 5 m

- **Piping Length Characteristic (Cooling)**



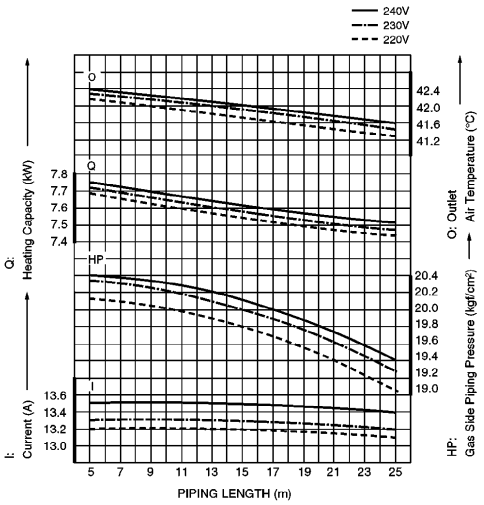
[Condition] Room temperature: 27/19°C
Outdoor temperature: 35/24°C
Cooling opeartion: At High fan

- **Heating Characteristic**



[Condition] Room temperature: 20°C
Heating operation: At High fan
Piping length: 5 m

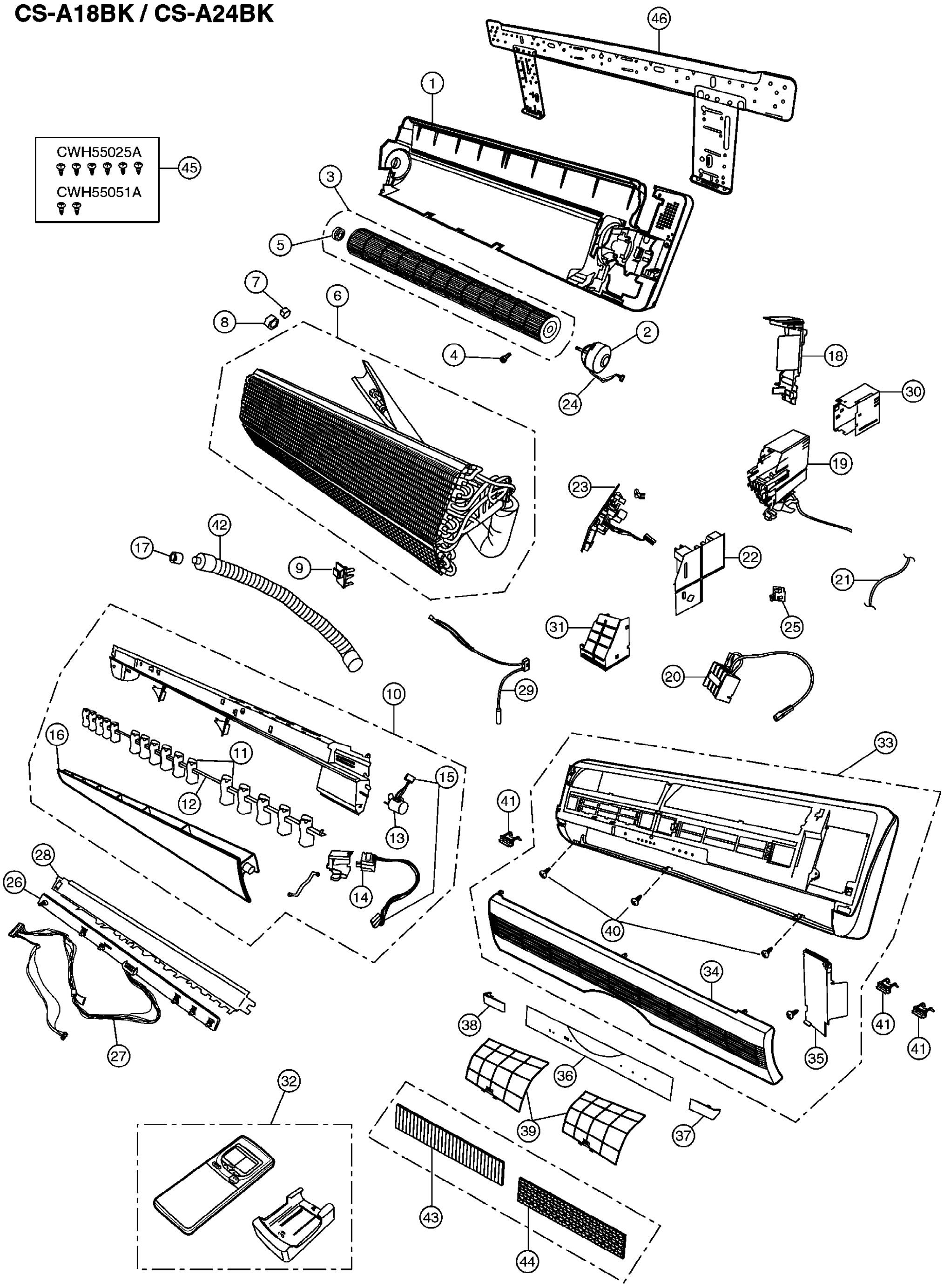
- **Piping Length Characteristic (Heating)**



[Condition] Room temperature: 20°C
Outdoor temperature: 7/6°C
Heating opeartion: At High fan

15. Exploded View

CS-A18BK / CS-A24BK


46
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CWH55025A
CWH55051A
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Note:

The above exploded view is for the purpose of parts disassembly and replacement.

The non-numbered parts are not kept as standard service parts.

16. Replacement Parts List

<Model: CS-A18BK / CS-A24BK>

REF. NO.	PART NAME & DESCRIPTION	QTY.		CS-A18BK	CS-A24BK	F
1	CHASSY COMPLETE	1		CWD50C1178	←	
2	FAN MOTOR	1		CWA981056	←	
3	CROSS FLOW FAN COMPLETE	1		CWH02C1010	←	
4	SCREW - CROSS FLOW FAN	1		CWH4580304	←	
5	BEARING ASS'Y	1		CWH64K007	←	
6	EVAPORATOR	1		CWB30C1125	CWB30C1129	
7	FLARE NUT	1		CWH6002140 (1/4")	←	
8	FLARE NUT	1		CWT25007 (1/2")	CWT25004 (5/8")	
9	INTAKE AIR SENSOR HOLDER	1		CWH32142	←	
10	DISCHARGE GRILLE COMPLETE	1		CWE20C2102	←	
11	VERTICAL VANE	16		CWE241088	←	
12	CONNECTING BAR	1		CWE261025	←	
13	AIR SWING MOTOR	1		CWA98260	←	
14	AIR SWING MOTOR	1		CWA981041	←	
15	LEAD WIRE - AIR SWING MOTOR	1		CWA67C3731	←	
16	HORIZONTAL VANE	1		CWE241072	←	
17	CAP - DRAIN TRAY	1		CWH52C1001	←	
18	PARTICULAR PIECE	1		CWD932162	←	
19	CONTROL BOARD	1	(1) (2) (3) (4)	CWH102103 CWH102103A CWH102103 CWH102103	← ← ← ←	
20	TERMINAL BOARD COMPLETE	1		CWA28C2066	CWA28C2070	
21	POWER SUPPLY CORD	1	(1) (2) (3) (4)	CWA20C2163 CWA20C2163 CWA20C2215 CWA20C2163	CWA20C2164 CWA20C2164 CWA20C2216 CWA20C2164	
22	ELECTRONIC CONTROLLER - MAIN	1		CWA742661	CWA742496	
23	ELECTRONIC CONTROLLER - POWER	1		CWA742616	←	
24	LEAD WIRE - FAN MOTOR	1		CWA67C3732	CWA67C3733	
25	P.C.B. RECEIVER	1		CWA73C1124	←	
26	ELECTRONIC CONTROLLER - INDICATOR	1		CWE39C1046	←	
27	LEAD WIRE - INDICATOR	1		CWA67C3724	←	
28	INDICATOR HOLDER	1		CWD932163	←	
29	SENSOR COMPLETE	1		CWA50C608	←	
30	CONTROL BOARD TOP COVER	1		CWH131091	←	
31	CONTROL BOARD FRONT COVER	1		CWH131090	←	
32	REMOTE CONTROL COMPLETE	1		CWA75C2189	←	
33	FRONT GRILLE COMPLETE	1		CWE11C2330	←	
34	INTAKE GRILLE	1		CWE221037	←	
35	GRILLE DOOR	1		CWE141033	←	
36	CONTROL PANEL	1		CWE312114	←	
37	DECORATION BASE (R)	1		CWE351067	←	
38	DECORATION BASE (L)	1		CWE351068	←	
39	AIR FILTER	2		CWD001049	←	
40	SCREW - FRONT GRILLE	3		XTT4+16C	←	

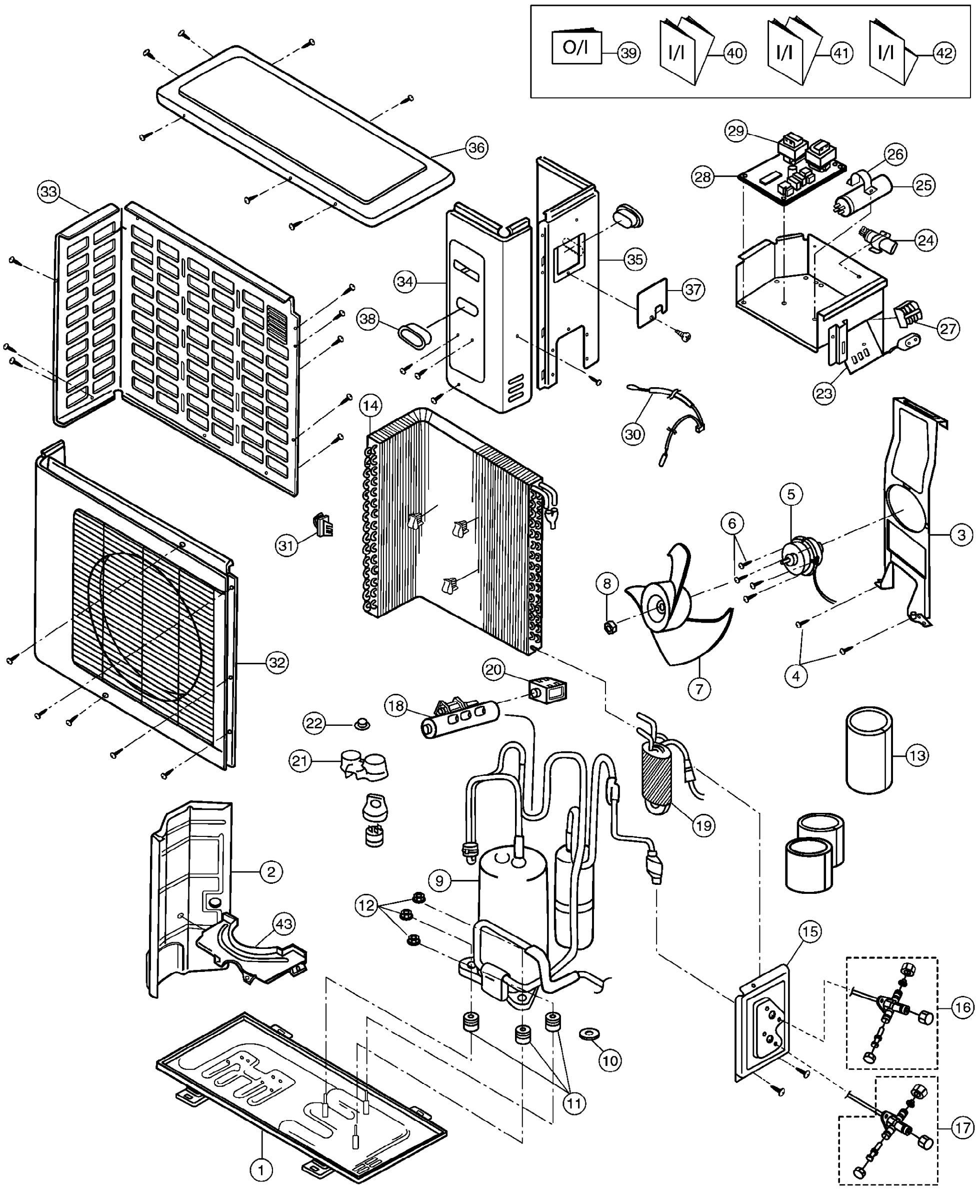
REF. NO.	PART NAME & DESCRIPTION	QTY.		CS-A18BK	CS-A24BK
41	CAP - FRONT GRILLE	3		CWH521062	←
42	DRAIN HOSE	1		CWH85287	←
43	AIR PURIFYING FILTER	1		CWMD00C0001	←
44	SOLAR DEODORIZING FILTER	1		CWMD00C0002	←
45	BAG COMPLETE - INSTALLATION SCREW	1		CWH82C067	←
46	INSTALLATION PLATE	1		CWH36K1007	←

(Note)

- All parts are supplied from MACC, Malaysia (Vendor Code: 086).
- “O” marked parts are recommended to be kept in stock.
- (1) — CS-A18BKP, CS-A24BKP (Europe).
- (2) — CS-A18BKP-2, CS-A24BKP-2 (Oceania).
- (3) — CS-A18BKP-3, CS-A24BKP-3 (Argentina).
- (4) — CS-A18BKP-6, CS-A24BKP-6 (Turkey).

17. Exploded View

CU-A18BK / CU-A24BK


O/I
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Note:

The above exploded view is for the purpose of parts disassembly and replacement. The non-numbered parts are not kept as standard service parts.

18. Replacement Parts List

<Model: CU-A18BK / CU-A24BK>

REF. NO.	PART NAME & DESCRIPTION	QTY.		CU-A18BK	CU-A24BK	REMARKS
1	CHASSY ASS'Y	1		CWD50K514B	←	
2	SOUND PROOF BOARD	1		CWH15223	←	
3	FAN MOTOR BRACKET	1	(1) (2) (3) (4)	CWD54238 CWD54237 CWD54237 CWD54238	CWD54237 ← ← CWD54237	
4	SCREW - FAN MOTOR BRACKET	4		CWH55027	←	
5	FAN MOTOR	1		CWA921080	CWA921081	0
6	SCREW - FAN MOTOR MOUNT	4		CWH55252	←	
7	PROPELLER FAN ASS'Y	1		CWH00K1001	←	
8	NUT - PROPELLER FAN	1		CWH56060	←	
9	COMPRESSOR	1		2JS318D3CB02	2JS464D3CA02	0
10	PACKING	1		CWB81043	←	
11	ANTI - VIBRATION BUSHING	3		CWH50055	←	
12	NUT - COMPRESSOR MOUNT	3		CWH4582065	←	
13	SOUND PROOF MATERIAL	1		CWG30894	←	
14	CONDENSER	1		CWB32C345R	←	
15	HOLDER COUPLING ASS'Y	1	(1) (2) (3) (4)	CWH35K029B CWH35K029B CWH35K029B CWH35K029B	← ← CWH35K030B ←	
16	3-WAY VALVE (LIQUID)	1		CWB01495	←	0
17	3-WAY VALVE (GAS)	1		CWB01364	CWB01430	0
18	4-WAY VALVE ASS'Y	1		CWB00K1007	CWB00K1008	0
19	TUBE ASS'Y (CAPILLARY TUBE & STRAINER)	1		CWT01C2390	CWT01C2392	
20	V-COIL COMPLETE	1		CWA43C2005	←	0
21	TERMINAL COVER	1		CWH171012	←	
22	NUT - TERMINAL COVER	1		CWH7080300	←	
23	CONTROL BOARD	1		CWH10K1019	←	
24	CAPACITOR - FAN MOTOR	1		F0GAH305A002	←	0
25	CAPACITOR - COMPRESSOR	1		DS371456CPNA	DS371506CPNA	0
26	HOLDER CAPACITOR	1		CWH30060	←	
27	TERMINAL BOARD ASS'Y	1		CWA28K216	←	
28	ELECTRONIC CONTROLLER	1		CWA742770	CWA742754	
29	ELECTRONIC CONTROLLER	1		CWA742771	CWA742698	
30	SENSOR COMPLETE	1		CWA50C618	←	
31	HOLDER - SENSOR	1	(1) (2) (3) (4)	CWH32089 CWH32089 CWH32089 CWH32082	← ← ← CWH32089	
32	CABINET FRONT PLATE	1		CWE06K034B	←	
33	CABINET REAR PLATE	1		CWE02096B	←	
34	CABINET FRONT PLATE	1		CWE06075B	←	
35	CABINET SIDE PLATE	1		CWE04111B	←	
36	CABINET TOP PLATE	1		CWE03101B	←	
37	CONTROL BOARD COVER	1		CWH13336A	←	

REF. NO.	PART NAME & DESCRIPTION	QTY.		CU-A18BK	CU-A24BK	REMARKS
38	HANDLE	2		CWE16000E	←	
39	OPERATION INSTRUCTIONS	1	(1) (2) (3) (4)	CWF563300 CWF563412 CWF563413 CWF563431	← ← ← ←	
40	INSTALLATION INSTRUCTIONS (ENGLISH, FRANCAIS, ESPANOL & DEUTSCH)	1		CWF612190	←	
41	INSTALLATION INSTRUCTIONS (ITALIANO, NEDERLANDS, PORTUGUES & GREEK)	1	(1) (2) (3) (4)	CWF612222 - - -	← - - -	
42	INSTALLATION INSTRUCTIONS (RUSSIA)	1	(1) (2) (3) (4)	CWF612223 - - -	← - - -	
43	PARTICULATE PLATE	1		CWD90830	←	

(Note)

- All parts are supplied from MACC, Malaysia (Vendor Code: 086).

- “O” marked parts are recommended to be kept in stock.

- (1) — CU-A18BKP5, CU-A24BKP5 (Europe).

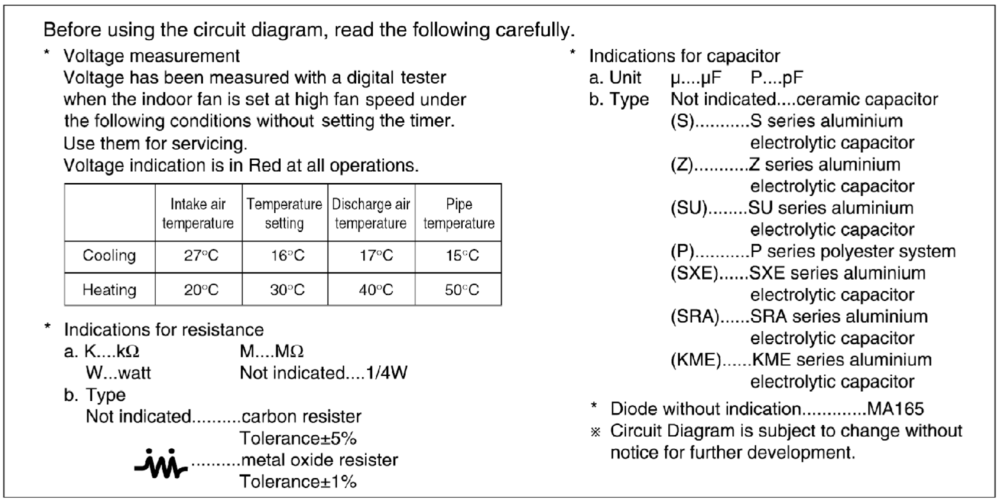
- (2) — CU-A18BKP5-2, CU-A24BKP5-2 (Oceania).

- (3) — CU-A18BKP5-3, CU-A24BKP5-3 (Argentina).

- (4) — CU-A18BKP5-6, CU-A24BKP5-6 (Turkey).

19. Electronic Circuit Diagram

How to use electronic circuit diagram



Before using the circuit diagram, read the following carefully.

* Voltage measurement
Voltage has been measured with a digital tester when the indoor fan is set at high fan speed under the following conditions without setting the timer.
Use them for servicing.
Voltage indication is in Red at all operations.

	Intake air temperature	Temperature setting	Discharge air temperature	Pipe temperature
Cooling	27°C	16°C	17°C	15°C
Heating	20°C	30°C	40°C	50°C

* Indications for resistance
a. K....kΩ M....MΩ
W...watt Not indicated....1/4W
b. Type
Not indicated..........carbon resister
Tolerance±5%
..........metal oxide resister
Tolerance±1%

* Indications for capacitor
a. Unit μ....μF P....pF
b. Type Not indicated....ceramic capacitor
(S)...........S series aluminium electrolytic capacitor
(Z)...........Z series aluminium electrolytic capacitor
(SU)........SU series aluminium electrolytic capacitor
(P)...........P series polyester system
(SXE)......SXE series aluminium electrolytic capacitor
(SRA)......SRA series aluminium electrolytic capacitor
(KME)......KME series aluminium electrolytic capacitor

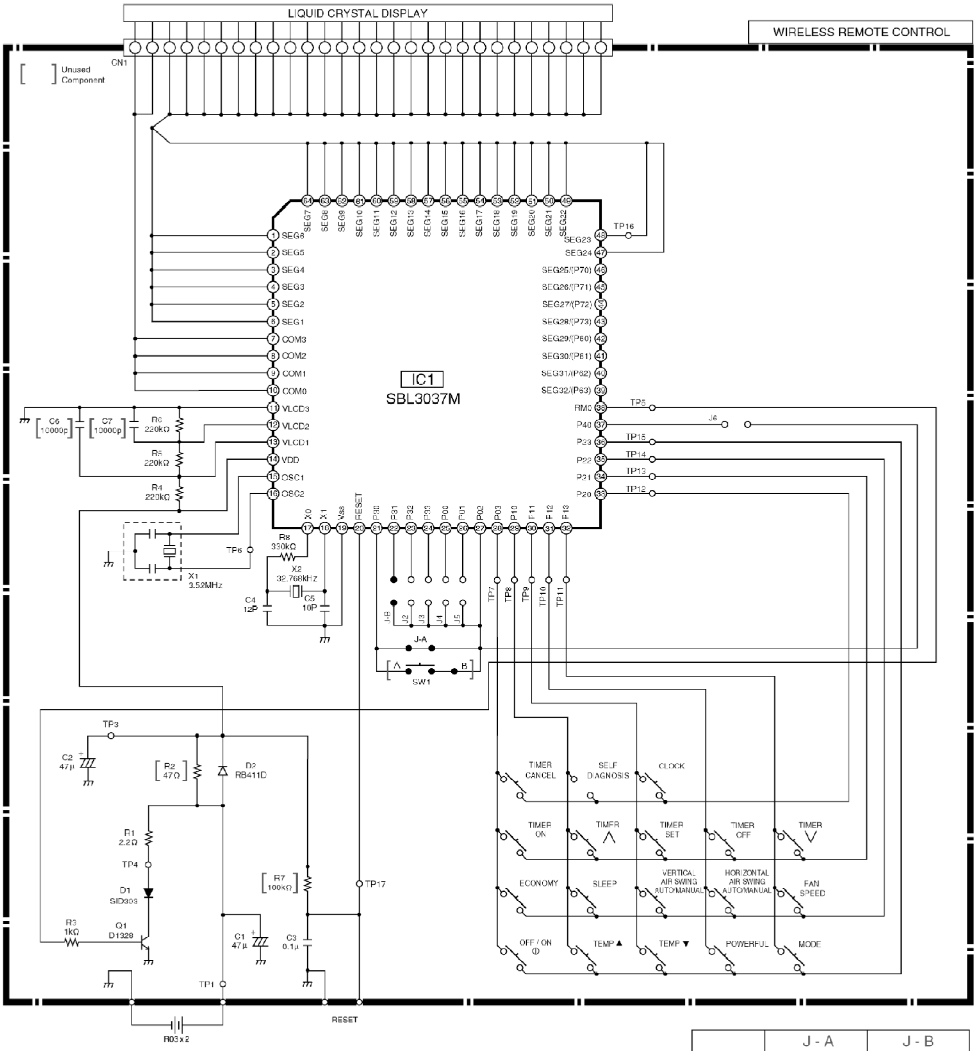
* Diode without indication.............MA165

※ Circuit Diagram is subject to change without notice for further development.

TIMER TABLE

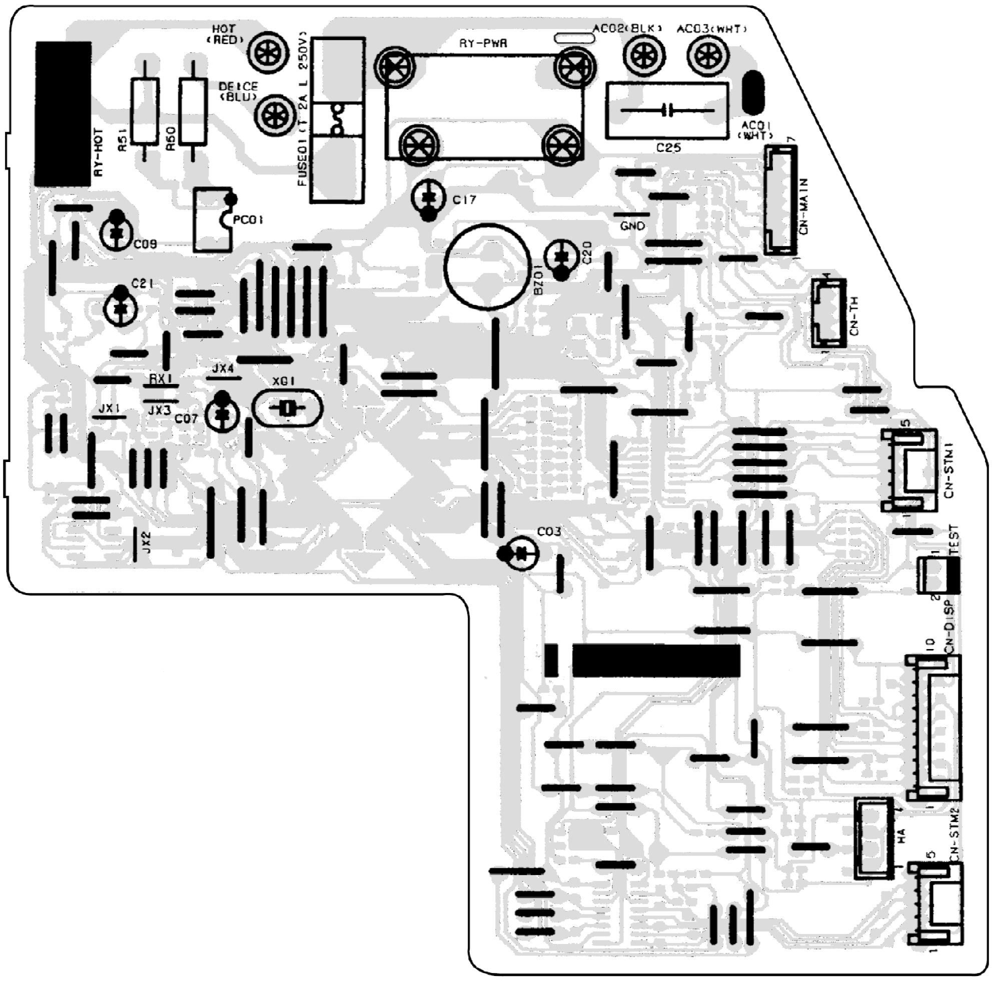
Name		Time	Test Mode (When test point Short-circuited)	Remarks
Sleep Mode Waiting		**1 hr.**	**6 sec.**	
Sleep Mode Operation		**8 hrs.**	**48 sec.**	
Real Timer		**1 hr.**	**1 min.**	
		10 min.	**10 sec.**	
		1 min.	**1 sec.**	
Time Delay Safety Control		**2 min. 58 sec.**	**0 sec.**	
Forced Operation		**60 sec.**	**0 sec.**	
Time Save Control		**7 min.**	**42 sec.**	
Anti-Freezing		**4 min.**	**0 sec.**	
Auto Mode Judgement		**25 sec.**	**0 sec.**	
Soft Dry	**OFF**	**6 min.**	**36 sec.**	
	ON	**10 min.**	**60 sec.**	**Soft Dry: 10 min. operation**
Deodorizing Control	**Cooling**	**40 sec.**	**4 sec.**	
		70 sec.	**7 sec.**	
		20 sec.	**2 sec.**	
		180 sec.	**18 sec.**	
	Soft Dry	**40 sec.**	**4 sec.**	
		360 sec.	**36 sec.**	
Comp. Reverse Rotation Detection		**5 min.**	**30 sec.**	**Comp. ON 5 min. and above**
		2 min.	**0 sec.**	
Comp./ Fan Motor Delay Timer		**1.6 sec.**	**0 sec.**	
Powerful Mode Operation		**15 min.**	**15 sec.**	
Random Auto Restart Control		**0 ~ 62 sec.**	**0 ~ 6.2 sec.**	
4 Way Valve		**5 min.**	**30 sec.**	
After Deice Ended		**30 sec.**	**3 sec.**	**Comp. OFF after deice**
Hotstart Delay Times		**4 min.**	**0 sec.**	
Hotstart Finish Times		**2 min.**	**0 sec.**	

19.1. REMOTE CONTROL / /

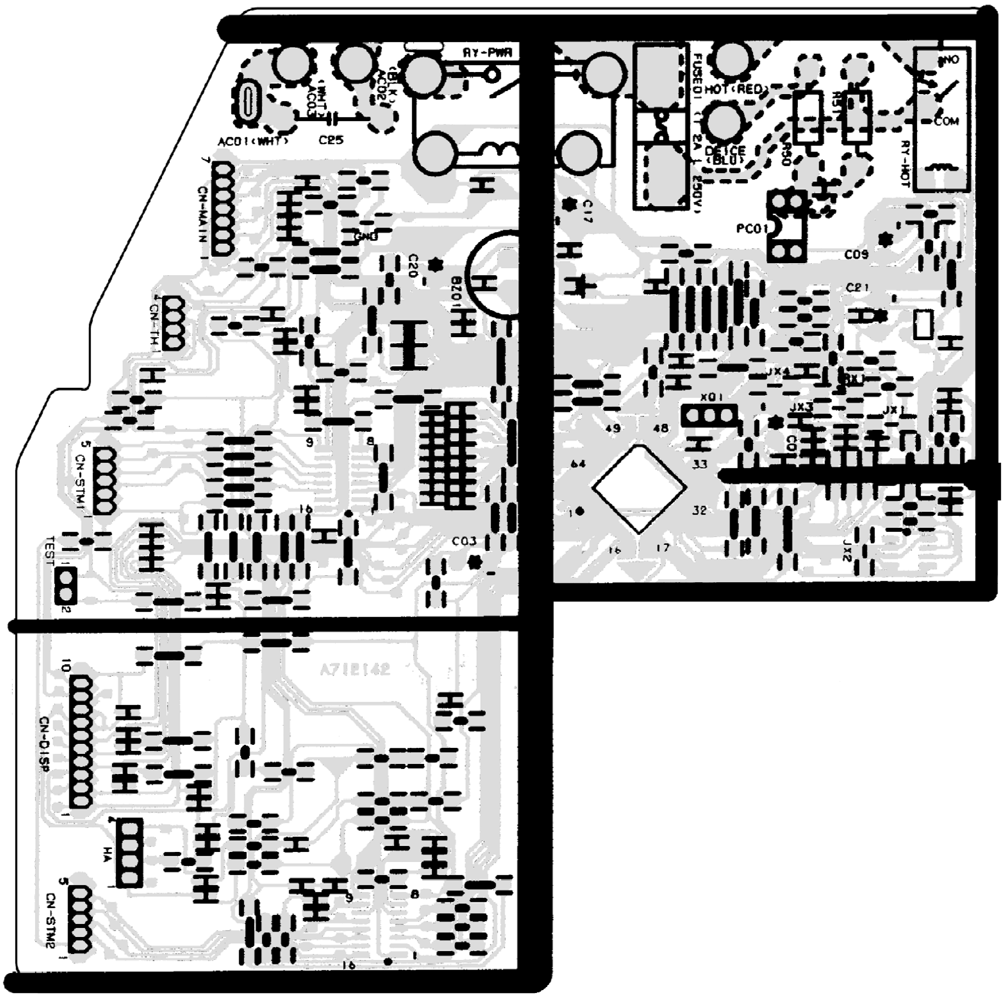

LIQUID CRYSTAL DISPLAY
WIRELESS REMOTE CONTROL
CN1
[ ] Unused Component
IC1
SBL3037M
SEG6
SEG5
SEG4
SEG3
SEG2
SEG1
COM3
COM2
COM1
COM0
VLCD3
VLCD2
VLCD1
VDD
OSC1
OSC2
SEG7
SEG8
SEG9
SEG10
SEG11
SEG12
SEG13
SEG14
SEG15
SEG16
SEG17
SEG18
SEG19
SEG20
SEG21
SEG22
SEG23
SEG24
SEG25/(P70)
SEG26/(P71)
SEG27/(P72)
SEG28/(P73)
SEG29/(P60)
SEG30/(P61)
SEG31/(P62)
SEG32/(P63)
RMC
P40
P23
P22
P21
P20
X0
X1
Vss
RESET
P30
P31
P32
P33
P00
P01
P02
P03
P10
P11
P12
P13
TP16
TP5
J6
TP15
TP14
TP13
TP12
C6 10000p
C7 10000p
R6 220kΩ
R5 220kΩ
R4 220kΩ
TP6
X1 3.52MHz
R8 330kΩ
X2 32.768kHz
C4 12P
C5 10P
J-B
J2
J3
J4
J5
TP7
TP8
TP9
TP10
TP11
J-A
A
B
SW1
TP3
C2 47μ
R2 47Ω
D2 RB411D
R1 2.2Ω
TP4
D1 SID303
R3 1kΩ
Q1 D1328
R7 100kΩ
TP17
C1 47μ
C3 0.1μ
TP1
R03 x 2
RESET
TIMER CANCEL
SELF DIAGNOSIS
CLOCK
TIMER ON
TIMER ∧
TIMER SET
TIMER OFF
TIMER ∨
ECONOMY
SLEEP
VERTICAL AIR SWING AUTO/MANUAL
HORIZONTAL AIR SWING AUTO/MANUAL
FAN SPEED
OFF / ON
TEMP ▲
TEMP ▼
POWERFUL
MODE

	J - A	J - B
0	SHORT	OPEN
1	OPEN	OPEN
2	SHORT	SHORT
3	OPEN	SHORT

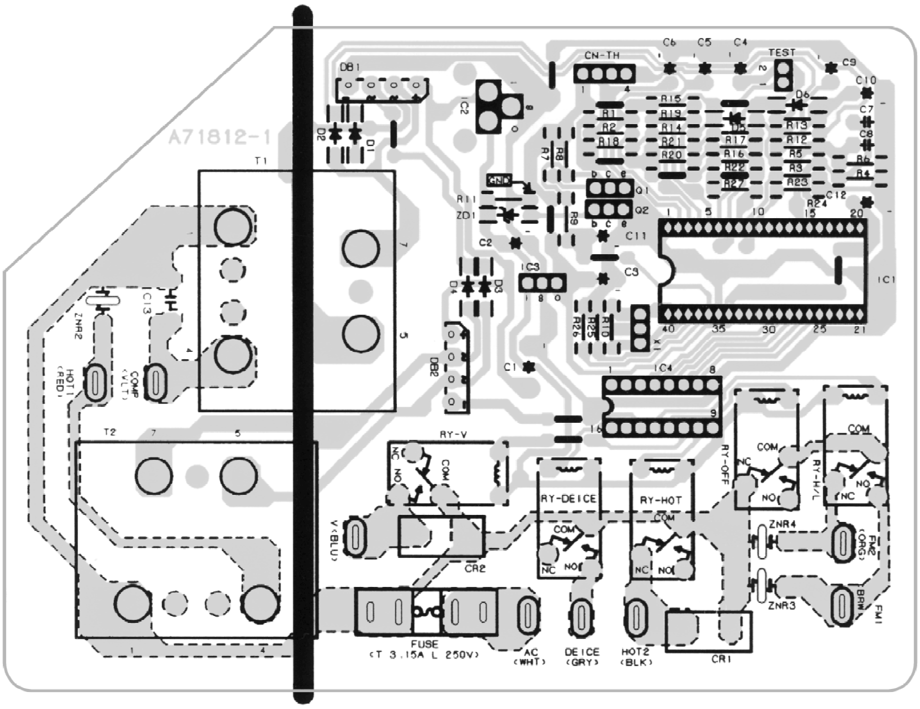
19.2. PRINT PATTERN / INDOOR UNIT PRINTED CIRCUIT BOARD / / / TOP VIEW


HOT (RED)
DEICE (BLU)
FUSE01 (T 2A L 250V)
RY-PWR
AC02 (BLK)
AC03 (WHT)
AC01 (WHT)
C25
RY-HOT
R51
R50
PC01
C09
C21
C17
BZ01
C20
GND
CN-MAIN
CN-TH
RX1
JX4
XG1
JX1
JX3
C07
JX2
C03
CN-STM1
TEST
CN-DISP
HA
CN-STM2

19.3. PRINT PATTERN / INDOOR UNIT PRINTED CIRCUIT BOARD / / / BOTTOM VIEW


RY-PWR
AC01 (WHT)
AC03 (WHT)
AC02 (BLK)
C25
CN-MAIN
CN-TH
CN-STM1
TEST
CN-DISP
HA
CN-STM2
GND
C20
BZ01
C03
C17
FUSE01
HOT (RED)
DEICE (BLU)
PC01
C09
C21
NO
COM
RY-HOT
X01
JX1
JX2
JX3
JX4
RX1
A712142

19.4. PRINT PATTERN / OUTDOOR UNIT PRINTED CIRCUIT BOARD / / /


A71812-1
DB1
D2
D1
IC2
T1
7
5
4
ZNR2
C13
HOT1 (RED)
COMP (VLT)
T2
1
CN-TH
C6
C5
C4
TEST
C9
C10
C7
C8
D6
D5
R15
R19
R14
R21
R20
R1
R2
R18
R17
R16
R22
R27
R13
R12
R5
R3
R23
R6
R4
R24
C12
R7
R8
R9
GND
R11
ZD1
Q1
Q2
b c e
C11
C2
C3
D4
D3
IC3
IC1
1
5
10
15
20
40
35
30
25
21
R26
R25
R10
DB2
C1
IC4
8
9
16
RY-V
NC
NO
COM
V (BLU)
CR2
RY-DEICE
RY-HOT
RY-OFF
RY-H/L
ZNR4
ZNR3
FM2 (ORG)
FM1
BRW
FUSE
(T 3.15A L 250V)
AC (WHT)
DEICE (GRY)
HOT2 (BLK)
CR1

[MACC] Printed in Malaysia /

SAFETY PRECAUTIONS

Before operating, please read the following "Safety Precautions" carefully.

- To prevent personal injury, injury to others and property damage, the following instructions must be followed.
- Incorrect operation due to failure to follow instructions will cause harm or damage, the seriousness of which is classified as follow:

⚠ Warning

This sign warns of death or serious injury.

⚠ Caution

This sign warns of damage to property.

- The instructions to be followed are classified by the following symbols:

⊘

This symbol (with a white background) denotes an action that is PROHIBITED.

These symbols (with a black background) denote actions that are COMPULSORY.

Installation Precautions

⚠ Warning

- **Do not install, remove and reinstall the unit by yourself.** Improper installation will cause leakage, electric shock or fire. Please engage an authorized dealer or specialist for the installation work.

⚠ Caution

- **This room air conditioner must be earthed.** Improper grounding could cause electric shock.
- **Ensure that the drainage piping is connected properly.** Otherwise, water will leak out.

- **Do not install the unit in a potentially explosive atmosphere.** Gas leak near the unit could cause fire.

Operation Precautions

⚠ Warning

This sign warns of death or serious injury.

- Do not share outlet.
- Do not insert plug to operate the unit. Do not pull out plug to stop the unit.
- Do not operate with wet hands.
- Do not damage or modify the power cord.
- Do not insert finger or other objects into the indoor or outdoor units.
- Do not expose directly to cold air for a long period.

- Plug in properly.
- Use specified power cord.

- If abnormal condition (burnt smell, etc.) occurs, switch off and unplug the power supply.

⚠ Caution

This sign warns of injury.

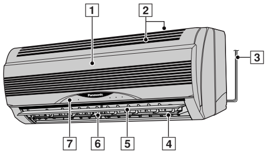
- Do not pull the cord to disconnect the plug.
- Do not wash the unit with water.
- Do not use for other purposes such as preservation.
- Do not use any combustible equipment at airflow direction.
- Do not sit or place anything on the outdoor unit.

- Switch off the power supply before cleaning.
- Ventilate the room regularly.
- Pay attention as to whether the installation rack is damaged after long period of usage.

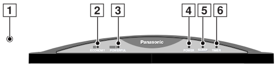
- Switch off the power supply if the unit is not used for a long period.

NAME OF EACH PART

Indoor Unit



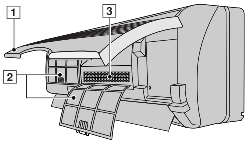
1 Front Panel
2 Air Intake Vent
3 Power Supply Cord
4 Air Outlet Vent
5 Vertical Airflow Direction Louver
6 Horizontal Airflow Direction Louver
7 Indicator Panel



1 Auto Operation Button (when the front panel is opened)

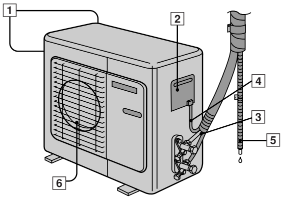
2 Economy Mode Indicator	–	GREEN
3 Powerful Mode Indicator	–	ORANGE
4 Power Indicator	–	GREEN
5 Sleep Mode Indicator	–	ORANGE
6 Timer Mode Indicator	–	ORANGE

- **Indoor Unit**
  (when the front panel is opened)



1 Front Panel
2 Air Filters
3 Air Purifying Filter

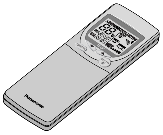
Outdoor Unit



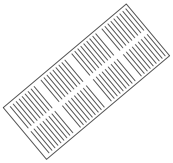
1 Air Intake Vents
2 Ground Terminal (Inside cover)
3 Piping
4 Connecting Cable
5 Drain Hose
6 Air Outlet Vents

Accessories

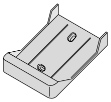
- **Remote Control**



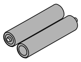
- **Remote Control Indication Sticker (Europe & Argentina only)**



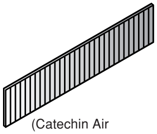
- **Remote Control Holder**



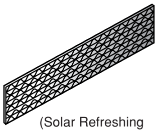
- **Two RO3 (AAA) dry-cell batteries or equivalent**



- **Air Purifying Filter**



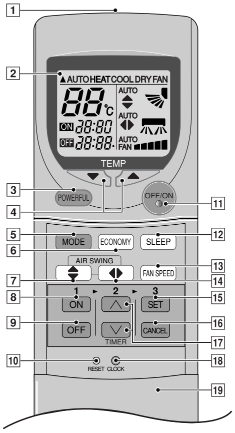
(Catechin Air Purifying Filter)



(Solar Refreshing Deodorizing Filter)

NAME OF EACH PART

■ Remote Control


1
2
AUTO HEAT COOL DRY FAN
88°C
AUTO
AUTO
ON 88:80
OFF 88:88
AUTO FAN
TEMP
3
POWERFUL
4
OFF/ON
11
5
MODE
ECONOMY
SLEEP
12
6
AIR SWING
FAN SPEED
13
7
14
8
1 2 3
ON
SET
15
9
OFF
CANCEL
16
TIMER
17
10
RESET CLOCK
18
19

- **Remote Control Signal.**
  - Make sure it is not obstructed.
  - Maximum distance : 10 m.
  - Signal received sound.
    One short beep or one long beep.
- **Notes for Remote Control.**
  - Do not throw or drop.
  - Do not get it wet.
  - Certain type of fluorescent lamps may affect signal reception. Consult your dealer.

1 Signal Transmitter

2 Operation Display

3 Powerful Mode Operation Button

4 Room Temperature Setting Button
(self-illuminating button)

5 Operation Mode Selection Button

6 Economy Mode Operation Button

7 Vertical Airflow Direction Button

8 ON-Timer Button

9 OFF-Timer Button

10 Reset Point
(Press with fine-tipped object to clear the memory)

11 OFF/ON Button
(self-illuminating button)

12 Sleep Mode Operation Button

13 Fan Speed Selection Button

14 Horizontal Airflow Direction Button

15 Timer Set Button

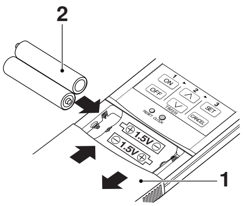
16 Timer Cancellation Button

17 Time-Setting Button

18 Clock Button

19 Remote Control Cover

- **How to Insert the Batteries**


2
ON
OFF
SET
CANCEL
RESET CLOCK
1.5V
1.5V
1

1 Slide down the remote control cover completely

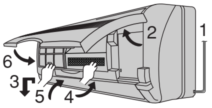
2 Insert the batteries

– Be sure the direction is correct
– 12.00 at display - flashing
- Set the current time (CLOCK) immediately to prevent battery exhaustion.

- **About the batteries**
  - Can be used for approximately one year.
- **Observe the following when replacing the batteries**
  - Replace with new batteries of the same type.
  - Do not use rechargeable batteries (Ni-Cd).
  - Remove the batteries if the unit is not going to be used for a long period.

PREPARATION BEFORE OPERATION

■ Indoor Unit



1 Connect the power supply cord to an independent power supply

2 Open the front panel

3 Remove the air filters

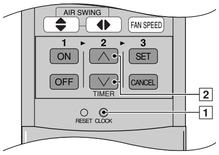
4 Fit the air purifying filters in place

5 Insert the air filters

6 Close the front panel

■ Remote Control

– To set the current time

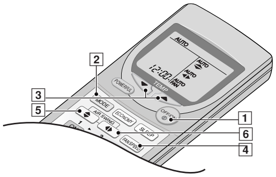

AIR SWING
FAN SPEED
1 2 3
ON
SET
OFF
CANCEL
TIMER
2
1
RESET CLOCK

1 Press 1.

2 Then press 2 to increase or decrease the time.

3 Press 1 again.
Set time at display will light up.

HOW TO OPERATE


2
3
5
AUTO
12:00
POWERFUL
MODE
ECONOMY
SLEEP
AIR SWING
FAN SPEED
OFF/ON
1
6
4

■ To start the operation

- Press 1.
- POWER indicator (green) on the indoor unit will light up.
- To stop, press once more.

■ Setting Mode

- Press 2 to select:-

Cooling Model

AUTO – Automatic Operation
COOL – Cooling Operation
DRY – Soft Dry Operation
FAN – Air Circulation Operation

Heat Pump Model

AUTO – Automatic Operation
HEAT – Heating Operation
COOL – Cooling Operation
DRY – Soft Dry Operation

■ Setting Temperature

- Press 3 to increase or decrease the temperature.
- The temperature can be set between 16°C ~ 30°C.
- Recommended temperature:

Cooling Model

COOL – 26°C ~ 28°C
DRY – 1°C ~ 2°C lower than the room temperature

Heat Pump Model

COOL – 26°C ~ 28°C
DRY – 1°C ~ 2°C lower than the room temperature
HEAT – 20°C ~ 24°C

- During **AUTO** Operation, press 3 to select:-

AUTO Hi
- Operation with 2°C higher than the standard temperature.

AUTO
- Operation with the standard temperature.

AUTO Lo
- Operation with 2°C lower than the standard temperature.

- **Standard Temperature**

Cooling Model

Indoor temperature	Operation	Standard temperature
	Cooling	25°C
23°C	Soft Dry	22°C

- Once the Automatic Operation is selected, the indoor temperature sensor operates automatically to select the desired operation mode with Cooling or Soft Dry.
- After the operation mode has been selected, the mode does not change.

Heat Pump Model

Indoor temperature	Operation	Standard temperature
	Cooling	25°C
23°C	Soft Dry	22°C
20°C	Heating	21°C

- At the beginning of the automatic operation, Heating, Cooling or Soft Dry is automatically selected according to the indoor temperature.
- The operation mode changes every hour, when necessary.

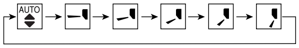
■ Setting the Fan Speed

- Press 4 to select:-

FAN ■	–	Low Fan Speed
FAN ■■■	–	Medium Fan Speed
FAN ■■■■■	–	High Fan Speed
AUTO FAN	–	Automatic Fan Speed The speed of the indoor fan is adjusted automatically according to the operation. The indoor fan stops occasionally during cooling operation.

■ Setting the Vertical Airflow Direction.

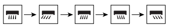
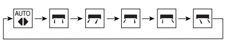
- Press 5 to select:-



- For COOL/DRY operation. Swing up/down automatically.
- For HEAT operation (For Heat Pump Model only) When the discharge air temperature is low such as at the start of the heating operation, the air blows at horizontal level. As the temperature rises, the hot air blows in a downwards direction.

■ Setting the Horizontal Airflow Direction.

- Press 6 to select:-

Horizontal Airflow Direction	Indoor Unit	
	Remote Control	

- For COOL/DRY operation. Swing left/right automatically.
- For HEAT operation (For Heat Pump Model only) There is no air swing during the discharge air temperature is low. When the temperature rises, the horizontal airflow louvers swing left/right automatically.

● Use this air conditioner under the following conditions:

Cooling Model

(Unit in °C)

DBT: Dry Bulb Temp WBT: Wet Bulb Temp	Indoor		Outdoor	
	DBT	WBT	DBT	WBT
Maximum Temperature	32	23	43	26
Minimum Temperature	16	11	16	11

Heat Pump Model

(Unit in °C)

DBT: Dry Bulb Temp WBT: Wet Bulb Temp	Indoor		Outdoor	
	DBT	WBT	DBT	WBT
Maximum Temperature-Cooling (Maximum Temperature-Heating)	32 (30)	23 (-)	43 (24)	26 (18)
Minimum Temperature-Cooling (Minimum Temperature-Heating)	16 (16)	11 (-)	16 (-5)	11 (-6)

● Notes

- If the unit is not going to be used for an extended period of time, turn off the main power supply. If it is left at the ON position, approximately 2.5 W of electricity will be used even if the indoor unit has been turned off with the remote control.
- If operation is stopped, then restart immediately, the unit will resume operation only after 3 minutes.

● Operation Details

COOL – Cooling Operation

- To set the room temperature at your preference cooling comfort.

AUTO – Automatic Operation

- Sense indoor temperature to select the optimum mode.
- Temperature is not displayed on the remote control during AUTO operation.

DRY – Soft Dry Operation

- A very gentle Cooling Operation, prior to dehumidification. It does not lower the room temperature.
- During Soft Dry operation, the indoor fan operates at Low fan speed.

HEAT – Heating Operation

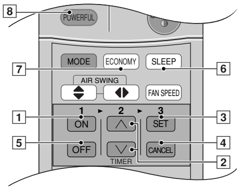
(for Heat Pump Model only)

- Heat is obtained from outdoor air to warm up the room. When the outdoor ambient air temperature falls, the heating capacity of the unit might be reduced.
- Defrosting Operation
  Depend on the outdoor temperature, the operation occasionally stops to melt the frost on the outdoor unit.

FAN – Air Circulation Operation

(for Cooling Model only)

- When the room temperature reaches the set temperature, operation commences at Low airflow volume. It stops when the room temperature drops to 2°C below the set temperature.
  (It is useful when using a heater).



SETTING THE TIMER

Ensure that the current time is correct before setting the timer. The timer cannot be set if the time display is flashing.

■ ON-TIMER Operation

To start the air conditioner operation automatically.

- Press 1 to set the operation.
- Press 2 to increase or decrease the time.
- Then press 3.
- To cancel this operation, press 4.

■ OFF-TIMER Operation

To stop the air conditioner operation automatically.

- Press 5 to set the operation.
- Press 2 to increase or decrease the time.
- Then press 3.
- To cancel this operation, press 4.

● Timer Mode Operation Details

- When the ON-Timer is set, operation will start before the actual set time. This is to enable the room temperature reaches the set temperature at the set time.

Cooling Model

COOL,DRY, AUTO – 15 minutes in advance

Heat Pump Model

COOL,DRY, – 15 minutes in advance
HEAT, AUTO– 30 minutes in advance

- Once the ON-Timer is set, operation will start at the set time everyday.
- The current time is not displayed when the timers are set.
- When both timers are used together, the TIMER mode indicator on the indoor unit remains lit even when the operation is stopped by the OFF-TIMER.

CONVENIENCE OPERATION

■ Sleep Mode Operation

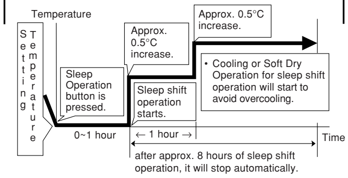
To obtain a comfortable room temperature while sleeping:-

- Press 6.
- Sleep mode indicator on the indoor unit will light up.
- To cancel this operation, press once more.

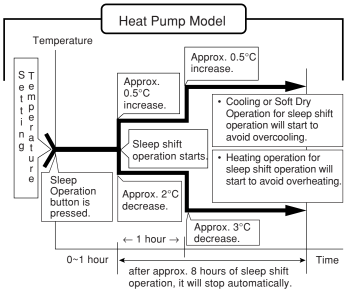
● Sleep Mode Operation Details

- When the room temperature reaches the set temperature, the airflow volume will change to low automatically.
- Sleep Mode Operation time is 8 hours.
- When used together with the timer, the timer has a priority.

Cooling Model



Heat Pump Model



■ Economy Mode Operation

To save electrical power consumption.
Please use this mode when the room has reached your desired temperature.

- Press 7.
- ※ Economy mode indicator (green) on the indoor unit will light up.
- Press once more to cancel this operation.

■ Powerful Mode Operation

To obtain the set temperature quickly.

- Press 8.
- ※ Powerful mode indicator (orange) on the indoor unit will light up.
- ※ Powerful mode will operate for 15 minutes only.
- To cancel this operation, press once more.

● Economy / Powerful Mode Operation Details

- Economy and Powerful operation cannot be selected simultaneously.
- The changes of the temperature and airflow volume are automatic.
- The remote control display remains unchanged.
- If sleep button or operation mode button is pressed, economy or powerful mode will be cancelled.
- During **FAN** – Air circulation operation, the powerful and economy operation are not available. (cooling model only)

Economy Mode Operation	Temperature	Airflow volume
COOL / DRY	0.5°C higher than set temp.	Super Low
HEAT (for Heat Pump model only)	0.5°C lower than set temp.	Automatic

Powerful Mode Operation	Temperature	Airflow volume
COOL / DRY	3°C lower than set temp.	Super High
HEAT (for Heat Pump model only)	3°C higher than set temp.	Automatic

CARE AND MAINTENANCE

■ Cleaning the Indoor Unit and Remote Control

- Wipe gently with a soft, dry cloth.
- Do not use water hotter than 40˚C or polishing fluid to clean the unit.

■ Cleaning the Air Filter

(Recommendation:- If the unit is operated in a dusty environment, clean the filters every two weeks, continuous use of this dirty filters will reduce cooling or heating efficiency)

1 Remove dirt using a vacuum cleaner.

2 Wash back of the air filter with water.

3 If badly soiled, wash it with soap or a mild household detergent.

4 Let it dry and reinstall it.
Be sure the “FRONT” mark is facing you.
※ Damaged air filter.
Consult the nearest authorized dealer.
Part No.: CWD001049.
- Do not use benzene, thinner, scouring powder or clothes soaked in caustic chemical to clean the unit.

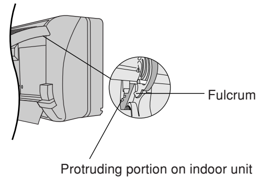
■ Cleaning the Front Panel

(Must be removed before washing)

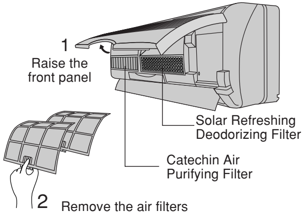
1 Raise the front panel higher than the horizontal and pull to remove it.

2 Gently wash with water and a sponge.
- Do not press the front panel too hard when washing.
- When use kitchen cleaning fluid (neutral detergent), rinse throughly.
- Do not dry the front panel under direct sunlight.

3 To fix the front panel, raise the front panel horizontally, match the protruding portion on the indoor unit to the fulcrum and push into place.



■ Air Purifying Filters


1
Raise the front panel
Solar Refreshing Deodorizing Filter
Catechin Air Purifying Filter
2
Remove the air filters

● Solar Refreshing Deodorizing Filter

- Used to remove unpleasant odour and deodorize the air in the room.
- Reusable.
- Vacuum, place under direct sunlight for 6 hours and fit it back in place.
(Recommended : every 6 months)

● Catechin Air Purifying Filter

- The filter is coated with catechin to prevent growth of bacteria and viruses.
- Reusable.
- Vacuum and fit it back in place
(Recommended : every 6 months)

- Recommended to change these filters every 3 years.
Do not reuse damaged filters.
Consult the nearest authorized dealer to purchase a new filter.
Catechin Air Purifying Filter No.: CZ-SF70P
Solar Refreshing Deodorizing Filter No.: CZ-SFD70P

- If you operate the air conditioner with dirty filters:-
– Air is not purified
– Cooling capacity decreases
– Foul odour is emitted

■ Pre-season Inspection

● Is the discharged air cold/warm?
Operation is normal if 15 minutes after the start of operation, the difference between the air intake and outlet vents temperature is:-

Cooling Model
COOL – 8°C or above

Heat Pump Model
COOL – 8°C or above
HEAT – 14°C or above

● Are the air intake or outlet vents of the indoor or outdoor units obstructed?

● Are the remote control batteries weak?
If the remote control display appears weak, replace the batteries.

■ When the Air Conditioner is Not Used for an Extended Period of Time

1 To dry the internal parts of the indoor unit, operate the unit for 2 - 3 hours using:-

Cooling Model
FAN operation

Heat Pump Model
COOL operation with 30°C set temperature

2 Turn off the power supply and unplug.
Note: If the unit is not switched off by the remote control, it will start operating when you plug in (because the unit is equipped with Auto Restart Control).

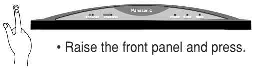
3 Remove the remote control batteries.

■ Recommended Inspection

- After used over several seasons, the unit will become dirty and thus decreases the unit’s performance. Depending on the operation conditions, a dirty unit may produce odour and dust may pollute dehumidification system. Therefore, a seasonal inspection is recommended in addition to regular cleaning. (Consult an authorized dealer).

HELPFUL INFORMATION

■ Auto Operation Button



- Raise the front panel and press.

● Automatic Operation

- If the remote control fails to function or has been misplaced, press the Auto Operation button to start the Automatic operation.
- The Automatic operation will be activated immediately once the Auto operation button is pressed. However, temperature cannot be adjusted in this operation.
- The power indicator on the indoor unit will blink until the operation mode is selected automatically.
- To cancel this operation, press once more.

● Remote Control Signal Receiving Sound

- To switch off the beep (Signal Receiving Sound), press the Auto Operation button for 10 seconds continuously or longer.
“Beep”, “beep” sound will be heard at the tenth seconds.
Note: “Beep” sound will be heard at the fifth seconds;
However please press continuously until you heard “beep”, “beep” sound.
- Repeat the above steps if you want to switch on the Signal Receiving Sound.

● (This is for Servicing purposes only.)

Note: If you press this button continuously for 5 to 10 seconds, Test Run operation will be performed.
A “beep” sound will be heard at the fifth seconds indicating the Test Run starts to operate.

■ Auto Restart Control

- If power is resumed after a power failure, the operation will restart automatically after 3 - 5 1/2 minutes.
- Operation will be restarted automatically under the previous operation mode and airflow direction when power is resumed as the operation is not stopped by the remote control.

■ Timer Setting

- When power failure occurs, the timer setting will be cancelled. Once power is resumed, reset the timer.

■ Thunder and Lightning

- This air conditioner is equipped with a built-in surge protective device. However, in order to further protect your air conditioner from being damaged by abnormally strong lightning activity, you may switch off the main power supply and unplug from power socket.

ENERGY SAVING AND OPERATION HINTS

■ Setting the Temperature

- Approximately 10% of electricity can be saved.
- Set the temperature higher or lower than the desired temperature.

Cooling Model
Cooling Operation : 1°C higher

Heat Pump Model
Cooling Operation : 1°C higher
Heating Operation : 2°C lower

■ Air Filters and Air Purifying Filters

- Clean the air filters every 2 weeks and the Air Purifying Filters every 6 months.
- Dirty filters may reduces cooling or heating efficiency.

■ Keep All Doors and Windows Closed

- Otherwise, cooling or heating performance will be reduced and electricity cost is wasted.

■ Outdoor Unit

- Do not block the air outlet vents. Otherwise, it will lower the cooling or heating performance.

■ Timer and Sleep Mode

- To prevent wastage of electricity, use sleep mode when sleeping or Timer when going out.

■ Avoid Direct Sunlight

- Keep curtains or drapes closed to avoid direct sunlight during cooling operation.

TROUBLESHOOTING

■ Normal Operation

Is it okay?	This is the answer
• Air conditioner has been restarted, but does not operate for 3 minutes.	• This is to protect the air conditioner. Wait until the air conditioner begins to operate.
• A sound like water flowing can be heard.	• This is the sound of refrigerant flowing inside the air conditioner.
• It seems that fog is coming out from the air conditioner.	• Condensation occurs when the airflow from the air conditioner cools the room.
• The room has a peculiar odour.	• This may be a damp smell emitted by the wall, carpet, furniture or clothing in the room.
• During Automatic Fan Speed setting, indoor fan stops occasionally.	• This is to remove smell emitted by the surroundings.
• The outdoor unit emits water or steam.	• In COOL/DRY operation, moisture in the air condenses into water on the cool surface of outdoor unit piping that causes dripping.
• (For Heat Pump Model only) Operation stops for about 12 minutes during heating (The power indicator blinks).	• This is to melt the frost which has accumulated on the outdoor unit (defrosting operating). This will take no longer than about 12 minutes. Water drips from the outdoor unit. Wait until this operation ends. (the power indicator will light up). (Frost will accumulates on the outdoor unit when the outdoor temperature is low and humidity is high.)
• (For Heat Pump Model only) During heating operation, indoor fan may run at on and off conditions.	• This is to prevent undesired cooling effect during heating operation.

■ Abnormal Operation

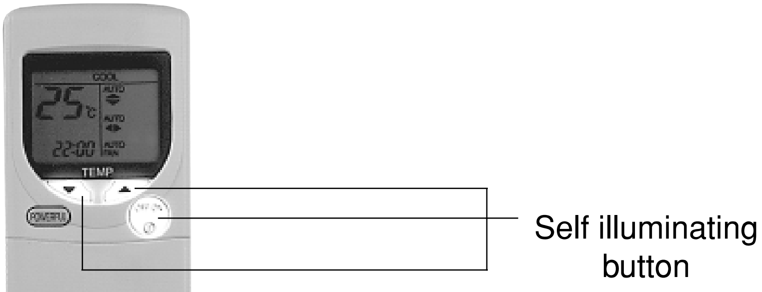
Is it okay?	Please check
• **The air conditioner does not operate.**	• Has the circuit breaker been tripped? • Has the power plug been removed from the wall outlet? • Is the timer being used correctly?
• **Air conditioner produces loud noise during operation.**	• Is the installation work slanted? • Is the front grille closed properly?
• **The air conditioner does not cool or warm effectively.**	• Has the temperature been set incorrectly? • Are the filters dirty? • Are the intake or outlet vents of the outdoor unit obstructed? • Are all windows and doors closed?

■ Call the Dealer Immediately

If the following conditions occur, turn off and unplug the main power supply, and then call the dealer immediately.

- **Abnormal noise is heard during operation.**
- **Water or foreign material gets into the remote control by mistake.**
- **Water leak from the indoor unit.**
- **Switches or buttons do not operate properly.**
- **The circuit breaker switches off frequently.**
- **Power supply cord and plug become unusually warm.**

Remote Control



OFF / ON ⏻

Operation OFF / ON

MODE

Operation Mode Selection

AUTO	Automatic Operation Mode
HEAT	Heating Operation Mode
COOL	Cooling Operation Mode
DRY	Soft Dry Operation Mode

FAN SPEED

Indoor Fan Speed Selection

FAN ■	Low Fan Speed
FAN ■■■	Medium Fan Speed
FAN ■■■■■	High Fan Speed
AUTO FAN	Automatic Fan Speed

AIR SWING

Vertical Airflow Direction Control

⬍	Vertical Automatic Airflow Direction Control and Manual Airflow Direction Control (5 stages of adjustment).
◀▶	Horizontal Automatic Airflow Direction Control and Manual Airflow Direction Control (5 stages of adjustment).

POWERFUL

Powerful Mode Operation OFF/ON

ECONOMY

Economy Mode Operation OFF/ON

TEMP.

Room Temperature Setting

Heating, Cooling, Soft Dry Operation.

- Temperature Setting (16°C to 30°C)

Automatic Operation

Hi	Operation with 2°C higher than standard temperature.
	Operation with standard temperature.
Lo	Operation with 2°C lower than standard temperature.

ON-TIMER
OFF-TIMER

Timer Operation Selection

- 24-hour, OFF / ON Real Timer Setting.

TIME

Time / Timer Setting

- Hours and minutes setting.

SET
CANCEL

Timer Operation Set / Cancel

- ON Timer and OFF Timer setting and cancellation.

CLOCK

Clock Setting

- Current time setting.

SLEEP

Sleep Mode Operation OFF / ON

Indoor Unit

AUTO
OFF / ON

Automatic Operation Button

- Press for < 5s to operate Automatic operation mode.
  (Used when the remote control cannot be used.)
- Press continuously for 5s or < 10s to operate Test Run/Pump down. "Beep" sound will be heard at the 5th second. (Used when test running or servicing.)
- Press continuously for 10s and above to omit or resume the remote control signal receiving sound. "Beep, beep" sound will be heard at the 10th second.

Operation Indication Lamps (LED)

- POWER (Green) .... Lights up in operation, blinks in Automatic Operation Mode judging and Hot Start operation.
- SLEEP (Orange) .... Lights up in Sleep Mode Operation.
- TIMER (Orange) .... Lights up in Timer Setting.
- POWERFUL (Orange) ... Lights up in Powerful Mode Operation.
- ECONOMY (Green) ...... Lights up in Economy Mode Operation.

Operation Mode

- Heating, Cooling, Soft Dry and Automatic Mode.

Powerful Operation

- Reaches the desired room temperature quickly.

Economy Operation

- To reduce electrical power consumption.

Random Auto Restart Control

- Operation is restarted randomly after power failure at previous setting mode.

Anti-Freezing Control

- Anti-Freezing control for indoor heat exchanger. (Cooling and Soft Dry)

Sleep Mode Auto Control

- Indoor Fan operates refer to Indoor Fan Speed control.
- Operation stops after 8 hours.

Indoor Fan Speed Control

- High, Medium and Low.
- Automatic Fan Speed Mode
  - Heating : Fan speed varies from Me → SSLo in accordance with indoor heat exchanger.
  - Cooling : Fan rotates at Hi, Me and SLo speed. Deodorizing control is available.
  - Soft Dry : Fan rotates at SLo speed. Deodorizing control is available.

Airflow Direction Control

- Automatic air swing and manual adjusted by remote control for vertical and horizontal airflow.

Time Delay Safety Control

- Restarting is inhibited for appro. 3 minutes.

7 Minutes Time Save Control

- Cooling Operation only.

Anti-Dew Formation Control

- Anti-Dew Formation Control for indoor unit discharge area.

Hot-Start Control

- At Heating Operation the indoor fan will operate at SLo speed when indoor heat exchanger temperature reaches 30°C.

Anti Cold Draft Control

- The indoor fan operates at Lo$^-$ (30 sec.) after that SSLo when the indoor heat exchanger temperature is low. (During Heating mode thermal off)

Outdoor Unit

Compressor Reverse Rotation Protection Control

- To protect compressor from reverse rotation when there is a instantaneous power failure.

Overload Protector

- Inner protector.

60 Secs. Forced Operation Control

- Once the compressor is activated, it does not stop within the first 60 secs. However, it stops immediately with remote control stop signal.

Outdoor Fan Operation Control

- 6-pole induction motor (2 speed).
- For Cooling or Soft Dry operation
  Hi-speed .... When outdoor temperature reaches to 31°C.
  Lo-speed .... When outdoor temperature reaches to 29°C.
- For Heating operation
  Hi-speed .... When outdoor temperature reaches to 13.5°C.
  Lo-speed .... When outdoor temperature reaches to 15.5°C.
- For Over-heating Protection, the Fan is switched ON or OFF depending on the piping temperature and the outdoor temperature.

Deice Control

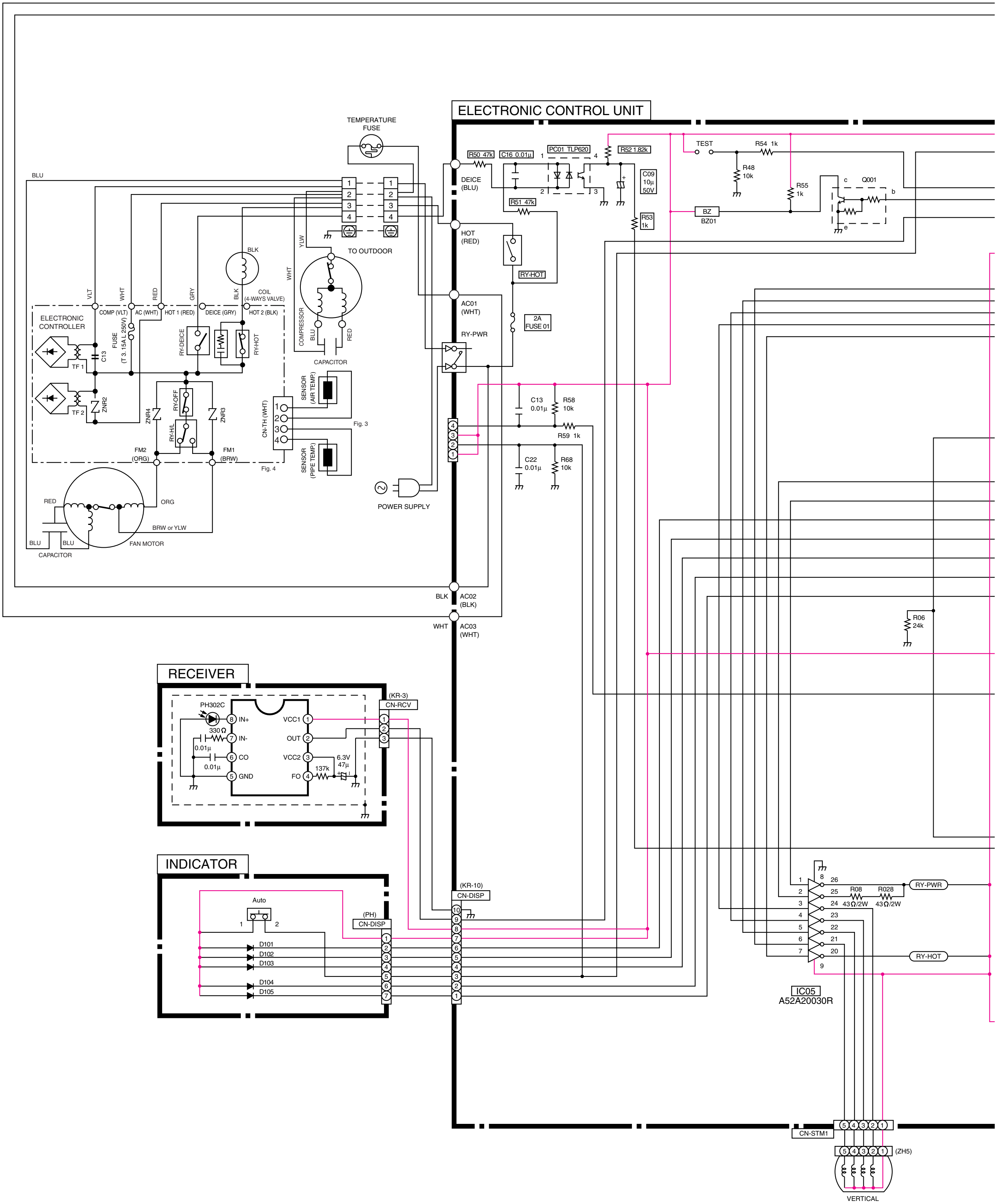
- To prevent frosting at outdoor heat exchanger during Heating Operation.

4-Way Valve Control

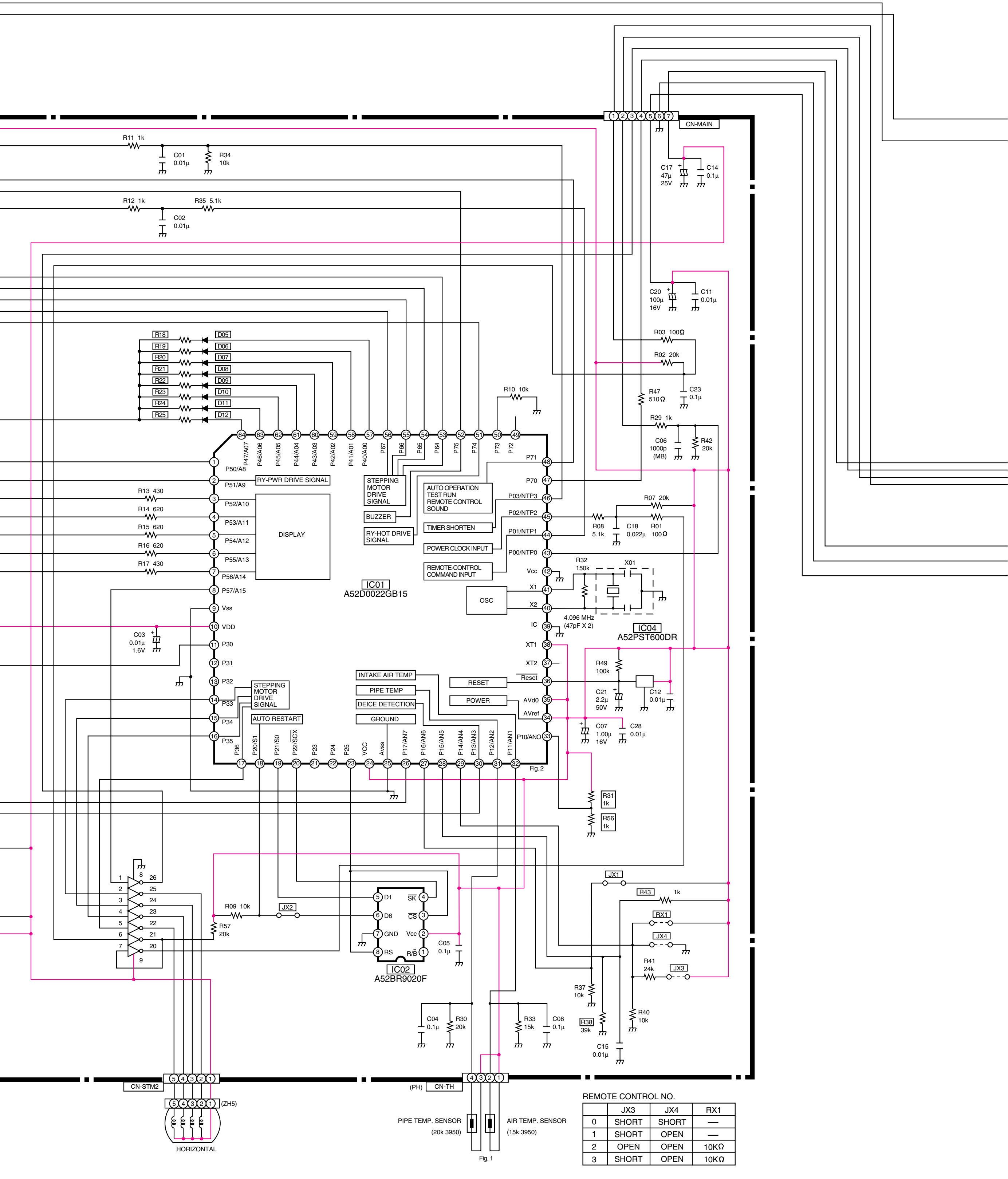
- When the unit is switched to “OFF” during Heating Operation, 4-way valve stays at Heating position for 5 minutes.

- **CS-A18BK / CU-A18BK**
- **CS-A24BK / CU-A24BK**

SCHEMATIC DIAGRAM 1/3


ELECTRONIC CONTROL UNIT
TEMPERATURE FUSE
BLU
1
2
3
4
TO OUTDOOR
BLK
COIL (4-WAYS VALVE)
YLW
WHT
VLT
WHT
RED
GRY
BLK
COMP (VLT)
AC (WHT)
HOT 1 (RED)
DEICE (GRY)
HOT 2 (BLK)
ELECTRONIC CONTROLLER
TF 1
TF 2
C13
FUSE (T 3.15A L 250V)
ZNR2
RY-DEICE
RY-HOT
COMPRESSOR
BLU
RED
CAPACITOR
RY-OFF
RY-H/L
ZNR4
ZNR3
FM2 (ORG)
FM1 (BRW)
CN-TH (WHT)
SENSOR (AIR TEMP)
SENSOR (PIPE TEMP)
Fig. 3
Fig. 4
RED
ORG
BRW or YLW
BLU
BLU
CAPACITOR
FAN MOTOR
POWER SUPPLY
DEICE (BLU)
HOT (RED)
AC01 (WHT)
RY-PWR
BLK
AC02 (BLK)
WHT
AC03 (WHT)
R50 47k
C16 0.01µ
PC01 TLP620
R52 1.82k
C09 10µ 50V
R51 47k
R53 1k
RY-HOT
2A FUSE 01
TEST
R54 1k
R48 10k
R55 1k
BZ
BZ01
Q001
c
b
e
C13 0.01µ
R58 10k
R59 1k
C22 0.01µ
R68 10k
R06 24k
RECEIVER
PH302C
IN+
IN-
CO
GND
VCC1
OUT
VCC2
FO
330Ω
0.01µ
0.01µ
137k
6.3V 47µ
(KR-3)
CN-RCV
INDICATOR
Auto
D101
D102
D103
D104
D105
(PH)
CN-DISP
(KR-10)
CN-DISP
IC05
A52A20030R
R08 43Ω/2W
R028 43Ω/2W
RY-PWR
RY-HOT
CN-STM1
(ZH5)
VERTICAL

SCHEMATIC DIAGRAM 2/3


CN-MAIN
1 2 3 4 5 6 7
C17 47µ 25V
C14 0.1µ
R11 1k
C01 0.01µ
R34 10k
R12 1k
R35 5.1k
C02 0.01µ
C20 100µ 16V
C11 0.01µ
R03 100Ω
R02 20k
R47 510Ω
C23 0.1µ
R10 10k
R29 1k
C06 1000p (MB)
R42 20k
R18 R19 R20 R21 R22 R23 R24 R25
D05 D06 D07 D08 D09 D10 D11 D12
P47/A07 P46/A06 P45/A05 P44/A04 P43/A03 P42/A02 P41/A01 P40/A00 P67 P66 P65 P64 P75 P74 P73 P72
P71 P70 P03/NTP3 P02/NTP2 P01/NTP1 P00/NTP0 Vcc X1 X2 IC XT1 XT2 Reset AVd0 AVref P10/ANO
P50/A8 P51/A9 P52/A10 P53/A11 P54/A12 P55/A13 P56/A14 P57/A15 Vss VDD P30 P31 P32 P33 P34 P35
P36 P20/S1 P21/S0 P22/SCX P23 P24 P25 VCC Avss P17/AN7 P16/AN6 P15/AN5 P14/AN4 P13/AN3 P12/AN2 P11/AN1
RY-PWR DRIVE SIGNAL
R13 430
R14 620
R15 620
R16 620
R17 430
DISPLAY
STEPPING MOTOR DRIVE SIGNAL
BUZZER
RY-HOT DRIVE SIGNAL
AUTO OPERATION TEST RUN REMOTE CONTROL SOUND
TIMER SHORTEN
POWER CLOCK INPUT
REMOTE-CONTROL COMMAND INPUT
OSC
IC01
A52D0022GB15
R07 20k
R08 5.1k
C18 0.022µ
R01 100Ω
R32 150k
X01
4.096 MHz (47pF X 2)
IC04
A52PST600DR
C03 0.01µ 1.6V
INTAKE AIR TEMP
PIPE TEMP
DEICE DETECTION
GROUND
RESET
POWER
R49 100k
C21 2.2µ 50V
C12 0.01µ
C07 1.00µ 16V
C28 0.01µ
STEPPING MOTOR DRIVE SIGNAL
AUTO RESTART
Fig. 2
R31 1k
R56 1k
1 2 3 4 5 6 7 8 9
26 25 24 23 22 21 20
R09 10k
JX2
R57 20k
D1 D6 GND RS SK CS Vcc R/B
C05 0.1µ
IC02
A52BR9020F
JX1
R43 1k
RX1
JX4
R41 24k
JX3
R37 10k
R38 39k
R40 10k
C15 0.01µ
C04 0.1µ
R30 20k
R33 15k
C08 0.1µ
CN-STM2
5 4 3 2 1
(ZH5)
HORIZONTAL
(PH)
CN-TH
4 3 2 1
PIPE TEMP. SENSOR (20k 3950)
AIR TEMP. SENSOR (15k 3950)
Fig. 1

REMOTE CONTROL NO.

	JX3	JX4	RX1
0	SHORT	SHORT	—
1	SHORT	OPEN	—
2	OPEN	OPEN	10KΩ
3	SHORT	OPEN	10KΩ

SCHEMATIC DIAGRAM 3/3

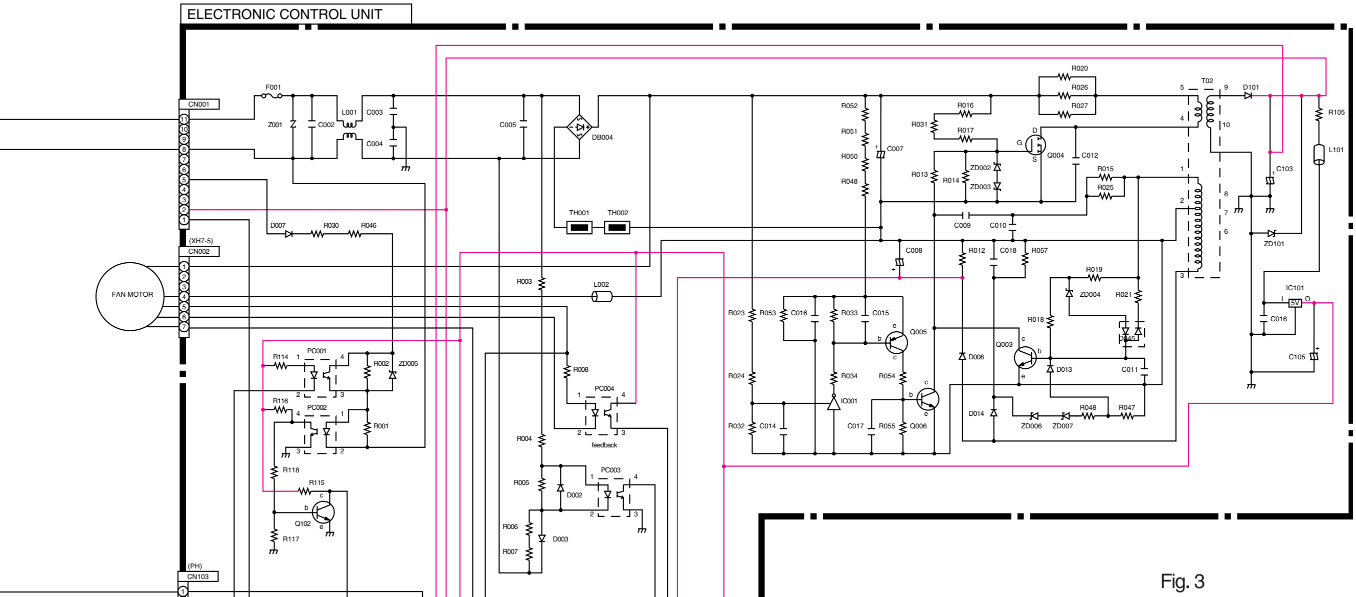
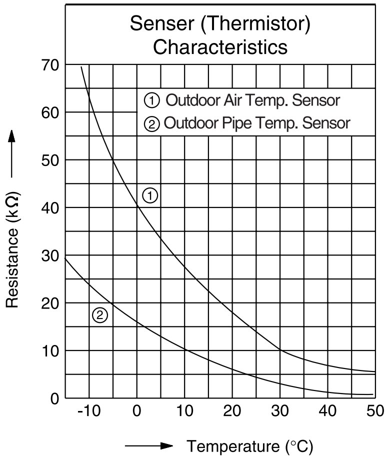

ELECTRONIC CONTROL UNIT
CN001
F001
Z001
C002
L001
C003
C004
C005
DB004
TH001
TH002
(XH7-5)
CN002
FAN MOTOR
D007
R030
R046
R003
L002
R008
PC004
feedback
R004
PC003
R005
D002
R006
D003
R007
R114
PC001
R002
ZD005
R116
PC002
R001
R118
R115
Q102
R117
(PH)
CN103
(PH)
CN101
R028
R029
PC005
R113
R009
ZD001
C066
R011
R010
Q001
10k
4.7k
PC006
R112
R052
R051
R050
R048
C007
R031
R016
R017
R013
R014
ZD002
ZD003
R020
R026
R027
Q004
C012
R015
R025
T02
D101
R105
L101
C103
ZD101
C009
C010
C008
R012
C018
R057
R019
ZD004
R021
R018
D015
Q003
D013
C011
R023
R053
C016
R033
C015
Q005
R024
R034
R054
IC001
Q006
R032
C014
C017
R055
D006
D014
ZD006
ZD007
R048
R047
IC101
5V
C016
C105

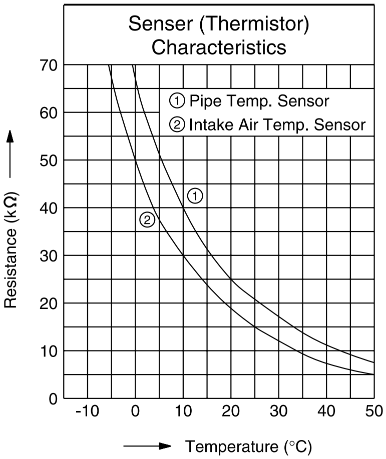
Fig. 3


Senser (Thermistor) Characteristics

① Outdoor Air Temp. Sensor

② Outdoor Pipe Temp. Sensor

Fig. 1


Senser (Thermistor) Characteristics

① Pipe Temp. Sensor

② Intake Air Temp. Sensor

Fig. 2

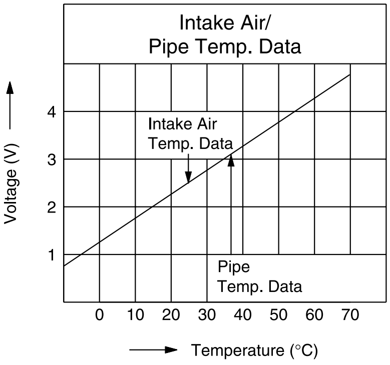
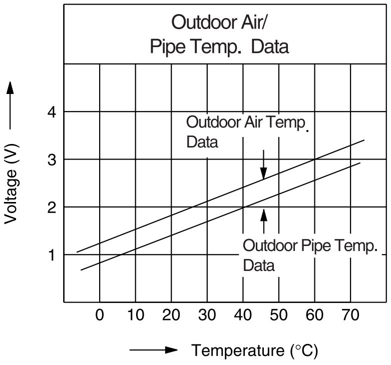

Intake Air/ Pipe Temp. Data

Fig. 4


Outdoor Air/ Pipe Temp. Data